OYSTERVILLE CREEK
BERKS COUNTY

STREAM REDESIGNATION EVALUATION REPORT
WATER QUALITY STANDARDS REVIEW

SEGMENT BASIN
DRAINAGE LIST: F
STREAM CODE: 01679

WATER QUALITY MONITORING AND ASSESSMENT SECTION (DSB)
DIVISION OF WATER QUALITY ASSESSMENT AND STANDARDS
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JUNE 2000
REVISED JULY 2001

GENERAL WATERSHED DESCRIPTION

Oysterville Creek is a tributary to Manatawny Creek in the Schuylkill River watershed. This basin covers an area of 12.2 square miles and contains 14.7 stream miles. It is located in District, Earl, Oley, and Pike Townships, Berks County. The Oysterville Creek basin currently has the protected water use designation Cold Water Fishes (CWF) and was evaluated for redesignation as High Quality (HQ) or Exceptional Value (EV) waters as a result of a petition submitted by the Berks County Conservancy and the District Township Supervisors. This report is based on field surveys conducted in June and August of 1999.

Land use in the candidate basin is mostly a mixture of low density residential, agriculture, and second growth hardwood forest. State Route 73 traverses the lower portion of the watershed. The village of Shanesville is located along this road.

WATER QUALITY AND USES

Surface Water:
No long term water quality data were available to allow a direct comparison to water quality criteria. Grab samples were collected at 5 stations in the Oysterville Creek basin during the August 1999 survey (Table 2). These samples indicated that water quality was generally good. Because the instantaneous nature of grab samples precludes comparison to applicable water quality criteria, the indigenous aquatic community is a better indicator of long-term conditions and is used as a measure of ecological significance.

Aquatic Biota:
Habitat assessments and biological samplings were conducted at 2 locations during the June 1999 survey. An evaluation of physical habitat assessments revealed that Station 1OC and reference station R1 scored in the Optimal category and Station 5OC scored in the Suboptimal category for benthic macroinvertebrates and fish (Table 3). Habitat scores ranged from 177 to 190 for the Oysterville Creek stations. Low scoring parameters included lack of an adequate riparian zone, vegetative disruptive pressure, and limited velocity/depth regimes. The reference station habitat score was 199, with the channel flow status category scoring lowest overall.

Benthic macroinvertebrate samples were collected at two stations (Table 4) using sampling techniques adapted from the EPA Rapid Bioassessment Protocols. Taxonomic diversity was good with a mean of 33.5 total taxa per station. Individuals from several genera that are sensitive to water quality degradation were common. Between both DEP and the Pennsylvania Fish and Boat Commision a total of 16 species of fish were collected at three stations (Table 5). Wild brown trout were present at all stations, but the PFBC concluded that only the headwaters remain cool enough during the summer months to support a low-density wild population of this species. The other species collected were a mixture of cold, cool, and warm water species. Waters in all portions of the basin were found to support their designated uses.

NATIONAL, STATE, REGIONAL, OR LOCAL SIGNIFICANCE

No portion of the Oysterville Creek basin possesses attributes that qualify as outstanding, national, state, regional, or local resource waters under the Department's regulatory criteria.

ECOLOGICAL OR RECREATIONAL SIGNIFICANCE

Selected benthic macroinvertebrate community metrics were compared to a reference station with a comparable drainage area (Table 7). Both Oysterville Creek and the reference stream, Pine Creek, are located in the Reading Prong (58h) subecoregion. Pine Creek is a cold water fishery with an Exceptional Value (EV) designation in Chapter 93. All sampling was conducted on the same day to minimize the effects of seasonal variation. This comparison was done using the following metrics which were selected as being indicative of community health: taxa richness; modified EPT index (total number of intolerant Ephemeroptera, Plecoptera, and Trichoptera taxa); modified Hilsenhoff Biotic Index; percent dominant taxon; and percent modified mayflies.

Based on these five metrics, Station 1OC in the headwaters of the basin had a biological condition score greater than 92% of the reference station score which qualifies for an EV designation under the Department's regulatory criteria. Station 5OC near the mouth of the stream had a score of 87% of the reference station score. This score exceeds the 83% threshold required for designation as High Quality Waters.

PUBLIC RESPONSE AND PARTICIPATION SUMMARY

The Department provided public notice of this redesignation evaluation and requested any technical data from the general public through publication in the Pennsylvania Bulletin on December 25, 1999 (29 Pa.B 6524). A similar notice was also published in the Reading Eagle Times on December 27, 1999. In addition, District, Pike, Earl, and Oley Townships were all notified of the evaluation in a letter dated December 23, 1999. The Berks County Planning Commission was also notified at the same time. No data on water chemistry, instream habitat, or the aquatic community were received in response to these notifications.

The Department sent copies of this draft report along with a cover letter dated May 17, 2001 requesting comments within a 30-day period, to Joseph Hoffman, Director of the Berks County Conservancy, the Berks County Planning Commission, and District, Earl, Oley, and Pike Townships. The only response received by the Department was from the Berks County Planning Commission, who concurred with the proposed recommendation.

RECOMMENDATIONS

Based on applicable regulatory criteria, the Department recommends the following changes to Chapter 93:

Oysterville Creek basin (source to T634 crossing at RMI 2.6)

- Change current CWF designation to EV
- Based on biological condition scores greater than 92% of the reference station
- Affects 5.8 stream miles

Oysterville Creek basin (T634 crossing to mouth) – except UNT 01680

- Change current CWF designation to HQ-CWF
- Based on biological condition scores greater than 83% of the reference station
- Affects 6.0 stream miles

Unnamed tributary to Oysterville Creek (01680) basin

- Retain current CWF designation

This designation provides less protection for the lower half of the basin than the EV designation requested by the petitioner.

FIGURE 1.
OYSTERVILLE CREEK
BERKS COUNTY

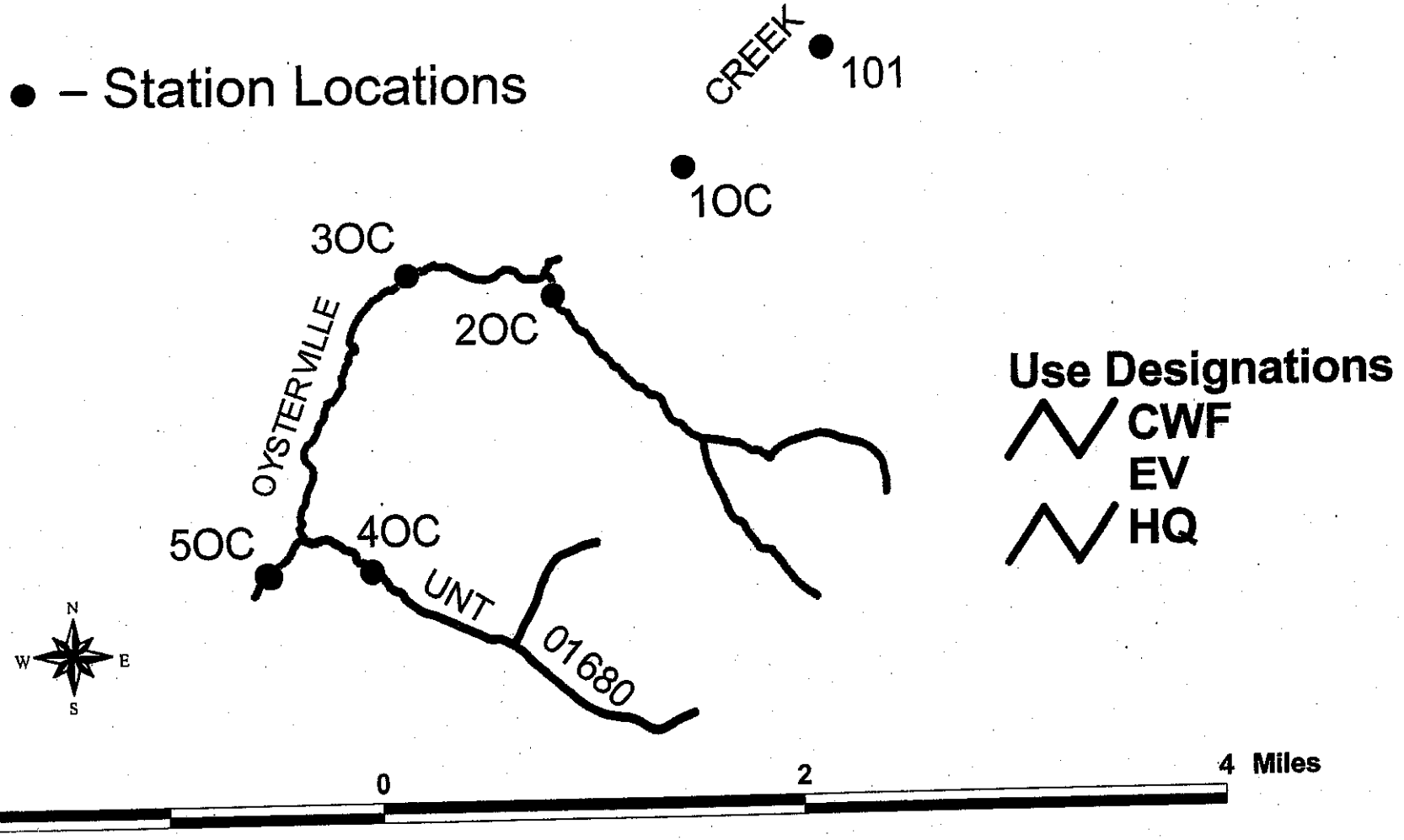

TABLE 1
STATION LOCATIONS
OYSTERVILLE CREEK
BERKS COUNTY

STATION	LOCATION
1OC	Oysterville Creek approximately 10 meters upstream of T615 crossing. Pike Township, Berks County Lat: 40 24 12 Long: 75 41 44 RMI: 3.43
2OC	UNT Oysterville Creek (01682) approximately 5 meters upstream of T620 crossing. Pike Township, Berks County Lat: 40 23 42 Long: 75 42 26 RMI:
3OC	Oysterville Creek approximately 15 meters upstream of T848 crossing. Pike Township, Berks County Lat: 40 23 47 Long: 75 43 12 RMI: 1.75
4OC	UNT Oysterville Creek (01680) approximately 5 meters upstream of T587 crossing. Earl Township, Berks County Lat: 40 22 36 Long: 75 43 29 RMI:
5OC	Oysterville Creek approximately 40 meters upstream of T589 crossing. Oley Township, Berks County Lat: 40 22 36 Long: 75 44 02 RMI: 0.11
R1	Pine Creek (01701) approximately 30 meters upstream of the T848 bridge. Pike Township, Berks County Lat: 40 24 45 Long: 75 44 01 RMI: 0.52

TABLE 2
WATER CHEMISTRY[1]
OYSTERVILLE CREEK, BERKS COUNTY
AUGUST 8, 1999

STATION	1OC	2OC	3OC	4OC	5OC
Field Parameters					
Temp (°C)	23.5	23.8	21.4	20.2	21.3
pH	8.0	7.7	8.1	7.6	7.8
Cond (µmhos)	138	232	209	237	234
Diss. O_2	7.4	5.9	7.1	6.9	7.3
Laboratory Parameters					
pH	7.2	7.4	7.8	7.2	7.6
Alkalinity	40	94	84	60	96
Acidity	0	0	0	0	0
Hardness	52	112	94	91	112
T Diss. Sol.	160	256	156	304	12
Susp.Sol.	<2	30	6	<2	***
NH_3-N	<.02	0.03	<.02	<.02	0.03
NO_2-N	<.01	0.02	0.01	<.01	<.01
NO_3-N	0.29	0.55	0.54	0.54	0.38
Total P	0.04	0.13	0.03	0.06	0.04
Ca	13.2	24.7	21.0	21.0	22.9
Mg	4.6	12.1	10.1	9.2	13.3
Cl	8	10	8	21	8
SO_4	< 20	< 20	< 20	< 20	< 20
As*	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
As Diss	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Cd*	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cd Diss	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
hex Cr*	<10	<10	<10	<10	<10
Cr*	<50	<50	<50	<50	<50
Cu*	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Cu Diss	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Fe*	131	1070	108	150	561
Pb*	< 1.0	1.6	< 1.0	< 1.0	< 1.0
Pb Diss	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Mn*	23	89	24	22	60
Ni*	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Ni Diss	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zn*	< 5.0	10.6	< 5.0	< 5.0	< 5.0
Zn Diss	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Al*	67	163	34	54	106
fecal coliforms	***	***	310	***	450

[1] - Except for pH & conductance and indicated otherwise, all values are total concentrations in mg/l
* - Total concentrations in µg/l

TABLE 3
HABITAT ASSESSMENT SUMMARY
OYSTERVILLE CREEK
BERKS COUNTY
JUNE 10, 1999

HABITAT PARAMETER	STATION[1]		
	1OC	5OC	R1
1. instream cover	17	16	17
2. epifaunal substrate	17	17	18
3. embeddedness	16	14	16
4. velocity/depth	14	13	15
5. channel alterations	17	16	17
6. sediment deposition	16	15	16
7. riffle frequency	15	16	18
8. channel flow status	16	15	14
9. bank condition	17	16	15
10. bank vegetation protection	18	17	16
11. grazing/disruptive pressures	16	14	18
12. riparian vegetation zone width	11	8	19
Total Score	190	177	199
Rating[2]	OPT	SUB	OPT

[1] Refer to Figure 1 and Table 1 for station locations.

[2] SUB = Suboptimal; OPT = Optimal

TABLE 4
BENTHIC MACROVERTEBRATE RESULTS
OYSTERVILLE CREEK, BERKS CO.
June 10, 1999

TAXA	STATION		
	1OC	5OC	R1
Ephemeroptera (mayflies)			
Baetidae; *Acentrella*		C	P
Baetis	A	A	P
Ephemerellidae; *Drunella*	VA	A	A
Ephemerella	C	C	C
Serratella	A	A	P
Heptageniidae; *Epeorus*	A	C	C
Leucrocuta		R	
Stenonema	C	R	P
Leptophlebiidae; *Paraleptophlebia*			P
Oligoneuriidae; *Isonychia*	P	C	P
Plecoptera (stoneflies)			
Leuctridae; *Leuctra*	P		P
Nemouridae; *Amphinemura*	R		
Peltoperlidae; *Pelto/Tallaperla*			R
Perlidae; *Acroneuria*	P	P	
Paragnetina			R
Perlesta	C	C	A
Perlodidae; *Isoperla*	P		P
Pteronarcyidae; *Pteronarcys*	P		P
Tricoptera (caddisflies)			
Glossosomatidae; *Agapetus*	C		R
Glossosoma	C	R	P
Hydropsychidae; *Cheumatopsyche*	C	P	
Diplectrona			P
Hydropsyche	A	A	P
Macrostemum		R	
Hydroptilidae; *Leucotrichia*		P	
Limnephilidae; *Goera*	R		
Philopotamidae; *Chimarra*		P	
Dolophilodes	A	C	A
Polycentropodidae; *Polycentropus*	R		R
Rhyacophilidae; *Rhyacophila*	A	R	C
Diptera (true flies)			
Tipulidae; *Antocha*	P	P	P
Dicranota	R		P
Tipula	R		R
Chironomidae	A	C	A
Megaloptera			
Corydalidae; *Nigronia*	P		R
Corydalus		R	
Sialidae; *Sialis*	R		
Odonata (dragon-, damselflies)			
Cordulegastridae; *Cordulegaster*	R		
Gomphidae; *Lanthus*	R		
Ophiogomphus	C		
Stylogomphus		P	P

TAXA	STATION		
	1OC	5OC	R1
Coleoptera (aquatic beetles)			
Dryopidae; *Helichus*	P		R
Elmidae; *Optioservus*	A	A	P
Oulimnius	R		C
Stenelmis	P	A	P
Psephenidae; *Psephenus*	A	C	C
Ptilodactylidae; *Anchytarsus*	R		
Helophoridae; *Helophorus*		R	
Non-Insect Taxa			
Turbellaria (flat-worms)			
Cura		R	
Oligochaeta			R
Lumbricidae		P	
Decapoda (crayfish)			
Cambaridae		R	
Cambarus			R
Gastropoda (univalves, snails)			
Physidae			R
Number of taxa in total sample	36	30	36

R=rare (<3 organisms); P=present (3-9 oganisms); C=common (10-24 organisms); A=abundant (25-99 organisms); VA=very abundant (>99 organisms)

TABLE 7
RBP METRIC COMARISON
OYSTERVILLE CREEK
BERKS COUNTY
JUNE 10, 1999

METRIC	STATION		
	1OC	5OC	R1
1. TAXA RICHNESS	26	23	22
Cand/Ref (%)	118	105	***
Biol. Cond. Score	6	6	6
2. MOD. EPT INDEX	15	12	14
Cand/Ref (%)	107	86	***
Biol. Cond. Score	6	6	6
3. MOD. HBI	2.48	3.73	2.54
Cand-Ref	-.06	1.19	***
Biol. Cond. Score	6	2	6
4. % DOMINANT TAXA	22	16	19
Cand-Ref	3	-3	***
Biol. Cond. Score	6	6	6
5. % MOD. MAYFLIES	37	34	34
Ref-Cand	-3	0	***
Biol. Cond. Score	6	6	6
TOTAL BIOLOGICAL CONDITION SCORE	30	26	30
% COMPARABILITY TO REFERENCE	100	87	***