

May 5, 2009

Final Study Plan

for the

2009 Biological and Water Quality Survey

of the

Killbuck Creek Basin

Medina, Wayne, Holmes and Coshocton Counties, Ohio

State of Ohio Environmental Protection Agency
Division of Surface Water
Lazarus Government Center
50 West Town St., Suite 700
P.O. Box 1049, Columbus, OH 43216 - 1049

&

Monitoring and Assessment Section
4675 Homer Ohio Lane
Groveport, OH 43125
614-836-8796

&

Surface Water Section
Northeast District Office
2110 E. Aurora Road
Twinsburg, OH 44087
(330) 963-1200

Geo-Referenced Relational Information

The sites listed in the study plan table are coded with STORET station IDs. These STORET IDs link data across several tables. They must be included on all field, lab and sample sheets.

Because the ECOS database needs to be maintained until the transition to EA3 is complete, and because various tables in ECOS lack a field for STORET IDs, the river mile, in concert with the rivercode, acts as the key relational field; ergo, **THE EXACT RIVER MILE LISTED IN THE STUDY PLAN TABLE MUST BE THE ONE YOU PUT ON FISH, MACROINVERTEBRATE AND QHEI FIELD SHEETS!!!** If for some reason you sample at a location other than the one listed in the study plan, and that location is a trivial distance away from the one listed in the table and is fully representative of the STORET station, use the river mile listed in the study plan, and simply record the location information separately. An exact river mile can be assigned later to an Absolute Location Point (ALP) if warranted.

Background

Historically, the Killbuck mainstem was impacted by under-treated industrial and municipal wastewater. Wastewater plant upgrades in the 1980s resulted in improved biological conditions; however, a persistent sag downstream from Wooster was evident in 1993. The sag was attributed to the confounding influences of historic channelization and the extensive wetlands that fringe the mainstem in south central Wayne County (wetlands contribute oxygen demand to the stream).

Agricultural land uses in some portions of the basin are intense. The 1993 survey noted areas that were significantly over-grazed by livestock. The present study seeks to measure differences between subwatersheds with a majority of agricultural land use given to livestock and subwatersheds dominated by row-crop agriculture.

Specialty foods, especially cheeses, are produced in the basin. Wastewater from food processing plants may carry high nutrient, BOD and TDS loads. Holmes Cheese and Guggisburg Cheese are large producers with histories of significant water quality impacts. Planned sampling locations, samples to be collected, and issues related to the respective locations are given in Table 2 (note that STORET numbers are yet to be assigned).

Sentinel Site

To aid in the development of a TMDL model(s), sentinel sites have been established at nine locations (Table 2). At each sentinel site, samples are collected monthly beginning prior to the more encompassing survey that starts on June 15th. The purpose of the sentinel sites is to establish a baseline of water chemistry values under varying flow conditions. Stream stage is to be measured to the nearest hundredth of a foot as given by the water line against a designated bridge piling or abutment. Sampling events at sentinel sites should cover the range of stream flow from the 10th to 90th percentiles.

Aquatic Life Use Designations

Previously unassessed streams (named and unnamed) within the study area have aquatic life use designations made prior to standardized approaches to the collection of physical habitat and biological samples. Consequently their aquatic life use designations are unverified.

Killbuck Creek Study Plan

2009 Field Season

Furthermore, many water bodies within the study area are entirely unclassified and have no existing beneficial use designations. The Ohio EPA is obligated to review, evaluate, or recommend (where appropriate) beneficial uses prior to initiating any permitting actions to a water body.

Waste Water Treatment Plants

The following table lists publicly owned wastewater treatment plants are located in the basin. Those that are being specifically evaluated are preceded with an asterisk.

Entity	Flow (mgd)	Compliance (2005-2008)	Receiving Stream
*Westfield Center WWTP	0.635	Phosphorus problems	Camel Creek
Creston WWTP	0.300	Treatment problems, numerous violations, possible hydraulic issues	Killbuck trib @ 71.7
*Shreve WWTP	0.483	Treatment problems, numerous violations, metals	Shreve Creek
Burbank WWTP	0.07	No problems	Killbuck Creek
*Apple Creek WWTP	0.300	Major ammonia issues	Apple Creek
*Spruce Tree Village MHP	0.020	Sporadic TSS and ammonia issues	Little Apple Creek
*Wooster WWTP	7.5	Significant noncompliance, treatment issues	Killbuck Creek
*Millersburg WWTP	0.50	Significant noncompliance, treatment issues	Killbuck Creek
*Holmes Cheese	0.129	Significant noncompliance, treatment issues	Corns Run
*Berlin WWTP	0.30	Minor compliance issues	Killbuck Creek
*Fredricksburg WWTP	0.06	Minor compliance issues	Salt Creek
*Guggisburg Cheese	0.018	Minor compliance issues	Daughty Creek
Holmes County Jail	0.0265	No violations since 2005	Martins Creek
*Holmesville WWTP	0.095	Minor sporadic compliance issues	Salt Creek
*Killbuck WWTP	0.411	Sporadic TSS compliance	Killbuck Creek
Golden Veal	0.016	Significant compliance issues	Killbuck Creek
Southeast Local Schools	0.04 (2 plants)	DO problems, just below limits, may be calibration issue	Apple Creek
Wayne Co. Hillcrest WWTP	0.200	Minor sporadic compliance issues	Apple Creek
*Wooster Water Treatment Plant	2.4 (total)	VOC cleanup, sporadic compliance issues	Apple Creek
Bosch Rexroth	0.283	VOC cleanup, sporadic compliance issues	Killbuck Creek
CerCo	0.156	Minor sporadic	Shreve Creek

Killbuck Creek Study Plan

2009 Field Season

		compliance issues	
Entity	Flow (mgd)	Compliance (2005-2008)	Receiving Stream
Cloverleaf Schools	0.04 (2 plants)	Significant compliance issues	Camel Creek
Amish Furniture Company	0.02	No issues	Martins Creek
Bunker Hill Cheese	None	No issues	Daughty Creek
Holmes County Landfill	Storm	Sporadic TSS compliance	Colliers Run
International Automotive Components Holmesville	0.231	No issues	Salt Creek
The Inn at Honey Run	0.014	Moderate compliance issues	Honey Run
West Holmes High School	0.042	Minor compliance issues	Tributary to Paint Creek

Killbuck Creek Study Plan

2009 Field Season

Table 2. Sample locations and associated samples for the 2009 Killbuck Creek biological and water quality survey.

STORET	RM	Samples	LOCATION	Issue	DRNAREA
17-150-000	<i>Killbuck Creek</i>				
R03K06	75.70	C, F, B	Canaan Center	Stratified land use sample - MX	5.1
R03S29	72.80	C, F, B, D	Britton Road	Ust Creston STP, Golden Veal	14.8
203615	70.90	C, F, B, D, E	Westfield Road	Dst Creston STP, Golden Veal	20.2
300592	66.90	C, F, B _Q , D, E	SR 83/Middle Road	Ust Burbank WWTP	43.9
203613	64.40	C, F, B _Q , D	Britton	Dst Burbank WWTP - far field	55.8
R03S27	59.60	C, E	Pleasant Home Rd	Bacteria/Chemistry	65.0
R03S16	55.40	C, F, B _Q , S, D, E	McAfee Road	Reference Site	87.0
300591	50.30	Co, F, B _Q , S, D, E	dst SR 3	Reference, Ust Wooster WWTP	117.0
R03W06	49.40	Co, F, B _Q , D, E	Dst Apple Creek, Wooster STP	Dst Wooster WWTP	190.0
R03W11	46.00	C, F, B _Q , D	Messner Road	Dst Wooster WWTP far field, trends	192.0
R03W22	40.05	C, E	C-1	Bacteria/Chemistry	255.0
R04W01	37.10	C, F, B _Q , D, E	C-320	Sentinel	313.0
R04S08	35.60	Co, F, B _Q , S, D	T-346	Reference Site	367.0
R04K03	31.90	C, F, B _Q , D, P, E	Clinton Ave, ust Millersburg STP	Ust Millersburg WWTP	380.0
R04S06	28.90	C, F, B _Q , D	T-92	Dst Millersburg WWTP far field	397.0
R04S05	24.90	C, F, B _Q , D, P	C-621	Ust Killbuck STP	463.0
R04S03	23.90	C, F, B _Q , D, P, E	dst. U.S. Rt. 62	Sentinel, dst Killbuck STP near field	464.0
203606	20.70	C, F, B _Q , D, P, E	US 62	Dst Killbuck STP far field	497.0
203603	13.30	C, F, B _Q , D, E	T-25	Monitoring	582.0
203602	2.10	C, F, B _Q	C-24	Monitoring	610.0

Killbuck Creek Study Plan

2009 Field Season

Table 2. Sample locations and associated samples for the 2009 Killbuck Creek biological and water quality survey.

STORET	RM	Samples	LOCATION	Issue	DRNAREA
17-150-011	<i>Millbrook trib (to Killbuck @ RM 43.6)</i>				
R03K07	2.70	C, F, B	Kister	Stratified land use sample - LS	5.0
17-151-000	<i>Bucklew Run</i>				
R04K04	1.50	C, F, B	T-413	Stratified land use sample - FR	4.3
17-153-000	<i>Doughty Creek</i>				
R04K06	18.70	C, F, B	T-359	Stratified land use sample - MX	5.5
R04K05	15.90	Co, F, B _Q , D, P, S	C-120, ust Guggisberg	Dst Berlin WWTP, Reference	13.0
R04S10	14.70	C, F, B, D, P	T-355, dst Guggisberg	Dst Guggisberg Chees - near field	16.0
R04W30	14.30	C, F, B, D, P, E	T-123, far-field Guggisberg	Dst Guggisberg Cheese - far field	12.6
R04S09	11.70	C, F, B, D, P	C-19	Monitoring, dst Guggisberg trib	19.0
300589	4.90	C, F, B _Q , D, E	SR 83	Sentinel	42.3
R04P04	0.60	Co, F, B _Q , S, D	C-343	Reference Site	59.0
17-153-001	<i>Trib. to Doughty Creek (RM 14.34)</i>				
R04K07	1.40	C, F, B	T-156	Charm - ust unsewered	1.4
R04S23	0.60	C, F, B, D	SR 366	Charm - dst unsewered	2.5
17-153-007	<i>Trib (RM 1.35) to Trib. of Doughty Creek (RM 14.34)</i>				
R04K08	0.00	C	25' Ust Confluence with Trib	Charm - ust unsewered	0.4
17-155-000	<i>Military Run</i>				
203623	0.80	C, F, B	C-58	Stratified land use sample - LS	4.0

Killbuck Creek Study Plan

2009 Field Season

Table 2. Sample locations and associated samples for the 2009 Killbuck Creek biological and water quality survey.

STORET	RM	Samples	LOCATION	Issue	DRNAREA
17-157-000	<i>Big Run</i>				
R04K09	3.60	C, F, B	T-330	Stratified land use sample - FR	8.3
17-160-000	<i>Wolf Creek</i>				
203625	4.10	C, F, B	T-31	Monitoring - trends	18.5
R04S24	2.10	C, F, B, D, E	T-78	Monitoring - trends	23.8
17-160-001	<i>Trib to Wolf Creek @ RM 6.49</i>				
R04K10	1.40	C, F, B	C-452	Stratified land use sample - FR	4.7
17-161-000	<i>Black Creek</i>				
R04K11	9.80	C, F, B	T-225	Stratified land use sample - FR	3.8
203626	4.60	C, F, B, D, E	T-31	Monitoring - CWH	28.3
17-161-001	<i>Trib to Black Creek @ RM 7.35</i>				
R04K12	0.70	C, F, B	T-14	Stratified land use sample - FR	4.6
17-162-000	<i>Shrimplin Creek</i>				
R04K13	2.90	C, F, B	T-252	Stratified land use sample - FR	5.7
17-164-000	<i>Sand Run (Trib to Killbuck @ RM 30.2)</i>				
R04K14	0.40	C, F, B	US 62	Stratified land use sample - FR	8.5
17-166-000	<i>Sapps Run</i>				
R04K15	0.80	C, F, B, D, P	C-349	Stratified land use sample - MX	8.5
17-168-000	<i>Bear Run</i>				
203630	0.80	C, F, B, P	C-400	Monitoring - Corns Run control	3.1

Killbuck Creek Study Plan

2009 Field Season

Table 2. Sample locations and associated samples for the 2009 Killbuck Creek biological and water quality survey.

STORET	RM	Samples	LOCATION	Issue	DRNAREA
17-169-000	<i>Corns Run</i>				
203631	1.50	C, F, B	Adj SR28, ust Holmes Cheese	Ust Holmes Cheese	1.1
R04K16	0.70	C, F, B, P, D	Adj SR28, ust Bear Run	Dst Holmes Cheese	1.7
17-170-000	<i>Honey Run</i>				
R04K01	1.00	C, F, B	T-332	Stratified land use sample - LS	6.0
17-172-000	<i>Martins Creek</i>				
R04K17	3.50	C, F, B, D, E	T-601	Coldwater Evaluation	12.5
17-173-000	<i>Paint Creek</i>				
R04K19	8.70	C, F, B	C-51	Stratified land use sample - MX	4.8
R04K18	5.30	C, F, B, E	T-262	Monitoring - EWH	14.3
R04S25	1.60	C, F, B, D, E	C-320 & T-556	Monitoring - EWH	18.1
17-173-001	<i>Trib to Paint Cr @ RM 3.01</i>				
R04K20	1.50	C, F, B	T-525	Stratified land use sample - LS	4.2
17-175-000	<i>Salt Creek</i>				
R04K22	8.50	C, F, B	Ust Salt Creek Road	Stratified land use sample - RC	13.2
R04K21	5.00	C, F, B ₀ , D	Holmesville Road	Dst Fredericksburg WWTP - near field	34.5
300590	3.00	C, F, B ₀ , D, E	St. Rt. 83	Sentinel	39.5
R04P06	0.70	C, F, B ₀ , D	T-576	Dst Holmesville WWTP - near field	41.4
17-176-000	<i>North Branch Salt Creek</i>				
R04K23	3.30	C, F, B, E	Moreland	Stratified land use sample - RC	6.9

Killbuck Creek Study Plan

2009 Field Season

Table 2. Sample locations and associated samples for the 2009 Killbuck Creek biological and water quality survey.

STORET	RM	Samples	LOCATION	Issue	DRNAREA
17-180-000	<i>Shreve Creek</i>				
R03P05	3.10	C, F, B, E	Shreve Eastern Road	Shreve WWTP, loads calculation	8.4
17-181-000	<i>Apple Creek</i>				
R03K09	10.50	C, F, B	Criswell	Stratified land use sample - RC	4.8
R03P01	8.30	C, F, B	Barnard Road	Dst Apple Creek WWTP - near field	15.0
R03W38	6.30	Co, F, B _Q , D, S	Ely Road (State Farm Rd)	Dst Apple Cr WWTP - far field, Reference	23.0
R03S31	2.00	C, F, B _Q , D, E	Pittsburg Road	Ust MHP STPs	47.8
R03W48	1.60	C, F, B _Q	Henry Road	Dst MHP STPs - near field	48.0
R03W50	0.60	C, F, B _Q	Spruce Road	Dst MHP STPs - far field	55.0
R03P02	0.10	Co, F, B _Q , D, E	Old Columbus Ave.	Sentinel	55.2
17-181-003	<i>Little Apple E (Trib to Apple @ RM 9.8)</i>				
R03K10	1.10	C, F, B	Hackett	Stratified land use sample - RC	3.8
17-182-000	<i>Little Apple Creek</i>				
R03S23	4.50	C, F, B	Smithville-Western Road	Monitoring-trends	5.8
R03K11	1.70	C, F, B	Portage	Stratified land use sample - UR	8.5
R03W47	0.20	C, F, B, D, E	Bowman Road	Monitoring-trends	12.7
17-183-000	<i>Clear Creek</i>				
R03K13	2.70	C, F, B	Mechanicsburg	Stratified land use sample - MX	7.2
R03K12	1.10	C, F, B, D	Silver Road	Monitoring - assessment	11.4

Killbuck Creek Study Plan

2009 Field Season

Table 2. Sample locations and associated samples for the 2009 Killbuck Creek biological and water quality survey.

STORET	RM	Samples	LOCATION	Issue	DRNAREA
17-184-000	<i>Little Killbuck</i>				
R03S34	6.50	C, F, B	Smithville Western	Stratified land use sample - RC	5.9
R03S33	0.50	Co, F, B _Q , S, D, E	SR 243	Reference site	20.6
17-185-000	<i>Rathburn Run (Trib to Little Killbuck @ RM 1.4)</i>				
R03K14	2.50	C, F, B	adj Lehr Rd	Stratified land use sample - RC	5.1
17-186-000	<i>Cedar Run</i>				
R03K15	1.50	C, F, B, S	Rice Hill	Stratified land use sample - MX	5.9
17-189-000	<i>Repp Run</i>				
203638	0.90	C, F, B	Franchester Rd	Stratified land use sample - MX	3.8
17-190-000	<i>Camel Creek</i>				
R03S36	3.80	Co, F, B _Q , S, P	Greenwich Road	Ust Westfield Center WWTP - reference site	10.0
R03W59	0.30	C, F, B, D, P	Westfield Road	Dst Westfield Center WWTP - far field	13.5
17-198-000	<i>Spring Creek</i>				
R03K08	0.40	C, F, B	Canal Rd	Stratified land use sample - MX	5.1

Sample Tallies for the 2009 Killbuck Creek Survey**Chemistry**

406 conventional (79 sites x 4 runs; 9 sentinels x 10 runs)

8 organics (8 sites x 1 run)

30 metals (7 reference + 9 sentinel sites x 2 runs) – one overlap

Sediment

7 Metals

7 Organics

7 TOC

7 Particle Size

Chlorophyll

periphyton 13 sites x 1 run = 39 samples + 4 field blanks

water column 5 sites x 1 run = 10 samples + 2 field blanks

Sondes

60

Fish

104 samples

Macroinvertebrates

48 quals

28 quants

Bacteria

216 E. coli (18 sites x 7 runs; 9 sites x 10 runs)

Contact Information

Study Plan and Field Sampling Team

Bob Miltner - Fish & Habitat (614) 836-8796
 Mike Bolton - Macroinvertebrates (614) 836-8781
 Bill Zawiski - Water Chemistry (330) 963-1134
 Joe Bishop – Load Modeling (614) 644-2874

Ohio EPA (emergency contacts)

Dave Stroud (Northeast District) (330) 963-1177
 Jeff Deshon (Central Office) (614) 836-8780

Wildlife Officers by County

Medina Rick Louttit
 (330) 245-3043

Wayne Eric Ucker
 (330) 245-3046

Holmes Jeremy Carter
 (330) 245-3045

Coshocton Garth Goodyear
 (740) 589-9982

Sheriff’s Offices by County

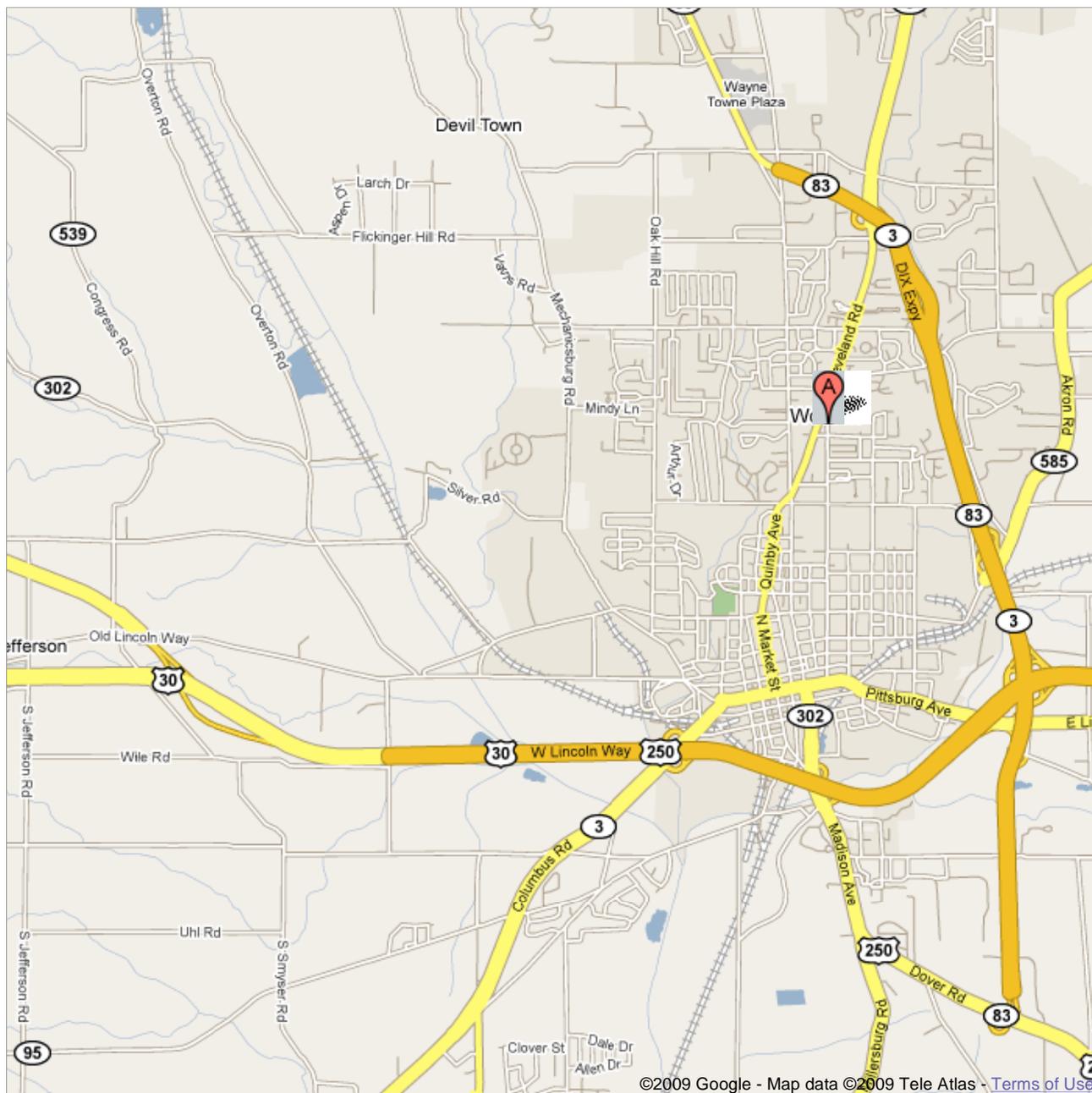
Medina County General Information 330-725-0028 Emergency Dispatch 330-725-6631 330-225-8180 330-336-6650	Wayne County 330-287-5750	Holmes County (330) 674-1936	Coshocton County (740) 622-2411
--	------------------------------	---------------------------------	------------------------------------



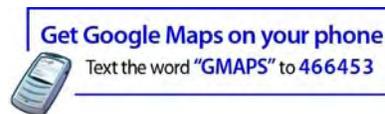
Get Google Maps on your phone



Text the word "GMAPS" to 466453



- A. **Wooster Community Hospital**
1761 Beall Ave, Wooster, OH - (330) 263-8100
2 reviews



A. **County of Holmes:** Joel Pomerene
Memorial Hospital
981 Wooster Rd, Millersburg, OH -
(330) 674-1015
1 review

