



Streams to Dreams

DELAWARE RUN PROJECT SPRING 2014

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Delaware Run Restoration Research and Analysis Continued:

Friday May 2nd 2014

Introduction:

During the spring semester 2014 the “Streams to Dreams” team decided the importance of building on the research gathered from the previous semester. To keep continuity we wanted to see this project evolve in a way where each semester was able to provide their fingerprint. This would allow for the project to continuously move forward and gain momentum as additional classes grappled with adding their perspectives and information to the project.

Fall 2013 fingerprint:

<http://delawarerunproject.files.wordpress.com/2013/12/delaware-run-assessment-final-project.pdf>

Spring 2014 fingerprint:

As we began to study the information from fall 2013 we also started to develop our own direction for where we wanted to help assist in this projects growth:

Our Project goals:

- Get more information on the storm water credits.
- Get additional terminology to better help understand floodplain areas.
- Work on soil sample information in arc GIS, try to get a better feel for the flood plain area.
- Map out all the trees next to the Delaware Run.
- Start getting an idea of soil types in the area to predict flood plain.
- Gather as much information to project the new path of the Delaware Run.
- Provide as much information for future.
- Provide suggestions for future classes to keep continuity.
- Provide all data information for future classes to build upon.

Additional research and analysis:

Soil Terminology:

https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SLOAN.html

https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SLOAN.html

Storm Water Credits:

OHIO:

http://www.neorsd.org/1_Library.php?a=download_file&LIBRARY_RECORD_ID=4699

DELAWARE:

http://www.delawareohio.net/UserUploads/UserDocuments/Departments/Public_Uilities/StormCreditManual.pdf

Procedure:

The procedure for the Delaware Run restoration that we are going to do this semester was a small but large part of research and data collection that needs to be done. This research is important to have done before we can even start working on the Run. We are going to map out in ArcGIS the points of all of the trees in the affected area along with some soil samples.

What we are going to do for the tree data:

- Have a printout map of the area of research from the ArcGIS Orthophoto from the Delaware data
- Mark on the map the points of the trees
- Number the trees and collect data
- The data we collected from the trees was
 - Circumference
 - Estimated Height
 - Native or invasive
 - Type of tree
 - If it's a part of the OWU Arboretum
- If we are not sure on some of the information like the type of tree and if it was native or invasive we will label it unknown in the attributes table.

What we are going to do for the soil sample data:

- We located on the soil maps from the Delaware data in ArcGIS two different soil types.
- We are going to try and see if we can tell the difference between the two soils types.
- Also we are going to see if there was construction fill put in to make the Run straight.

- We are also going to see how far down we must dig until we hit stone or water in the sediment.

What we are going to do with the collected data

- With this data we are going to project a path for the run, closer to its original meander.
- We are going to avoid arboretum trees.

With this data and the projected path we think that we are laying a great foundation for the research and projection that needs to be done before this project can break ground.

Results:

After collecting field data for all of the trees in the flood plain of the Delaware run, we placed the information into ArcGIS. The data was sorted by 3 different maps; A, B and C. The only trees we could identify were in the OWU arboretum but as a short term goal for future participates we would like to identify all trees within the area.

OWU TREES										OWU TREES										
ID	Shape	TIME_ID	HEIGHT	CROWN	DAT	TRV	TYPE	ARBOR	MAP	ID	Shape	TIME_ID	HEIGHT	CROWN	DAT	TRV	TYPE	ARBOR	MAP	
71	Point	15	78	9	02	00000000	RED	B	A	71	Point	1	55	6.5	02	00000000	ALSTHARE	RED	A	
72	Point	16	69	7.8	02	00000000	RED	B	A	72	Point	2	49	16.8	02	00000000	UNKOWN	RED	A	
73	Point	17	56	7.5	02	00000000	RED	B	A	73	Point	3	28	2.8	02	00000000	RED CEDAR	RED	A	
74	Point	18	77	11	02	00000000	RED	B	A	74	Point	4	79	8.1	02	00000000	UNKOWN	RED	A	
75	Point	19	66	9	02	00000000	RED	B	A	75	Point	5	59	6.8	02	00000000	UNKOWN	RED	A	
76	Point	20	88	8.5	02	00000000	RED	B	A	76	Point	6	59	6.5	02	00000000	UNKOWN	RED	A	
77	Point	21	58	8.8	02	00000000	RED	B	A	77	Point	7	55	4.4	02	00000000	UNKOWN	RED	A	
78	Point	22	66	8.8	02	00000000	RED	B	A	78	Point	8	66	8.7	02	00000000	UNKOWN	RED	A	
79	Point	23	66	8.8	02	00000000	RED	B	A	79	Point	9	66	9.3	02	00000000	UNKOWN	RED	A	
80	Point	24	59	11	02	00000000	RED	B	A	80	Point	10	59	5.8	02	00000000	ONE SHOVY	RED	A	
81	Point	25	79	9.8	02	00000000	RED	B	A	81	Point	11	45	6.4	02	00000000	UNKOWN	RED	A	
82	Point	26	66	8.8	02	00000000	RED	B	A	82	Point	12	15	2	02	00000000	BEOCH TREE	RED	A	
83	Point	27	59	11	02	00000000	RED	B	A	83	Point	13	26	18	2	02	00000000	RED BUD	RED	A
84	Point	28	66	2.1	02	00000000	RED	B	A	84	Point	14	18	2	02	00000000	RED BUD	RED	A	
85	Point	29	55	8.6	02	00000000	RED	B	A	85	Point	15	18	2.8	02	00000000	RED BUD	RED	A	
86	Point	30	35	8.3	02	00000000	RED	B	A	86	Point	16	8	6.7	02	00000000	UNKOWN	RED	A	
87	Point	31	59	2.3	02	00000000	RED	B	A	87	Point	17	14	1.4	02	00000000	UNKOWN	RED	A	
88	Point	32	66	2.1	02	00000000	RED	B	A	88	Point	18	8	6.8	02	00000000	UNKOWN	RED	A	
89	Point	33	14	1	02	00000000	RED	B	A	89	Point	19	58	5.8	02	00000000	UNKOWN	RED	A	
90	Point	34	66	8.6	02	00000000	RED	B	A	90	Point	20	18	9	02	00000000	UNKOWN	RED	A	
91	Point	35	46	3.4	02	00000000	RED	B	A	91	Point	21	18	10	8.7	02	00000000	UNKOWN	RED	A
92	Point	36	46	4.2	02	00000000	RED	B	A	92	Point	22	15	2.5	02	00000000	UNKOWN	RED	A	
93	Point	37	59	4.1	02	00000000	RED	B	A	93	Point	23	16	7	6.8	02	00000000	UNKOWN	RED	A
94	Point	38	47	4.4	02	00000000	RED	B	A	94	Point	24	21	3	02	00000000	UNKOWN	RED	A	
95	Point	39	84	4.7	02	00000000	RED	B	A	95	Point	25	66	16.8	02	00000000	UNKOWN	RED	A	
96	Point	40	66	11.8	02	00000000	RED	B	A	96	Point	26	66	16	11.3	02	00000000	UNKOWN	RED	A
97	Point	41	47	1.7	02	00000000	RED	B	A	97	Point	27	84	24	8	02	00000000	UNKOWN	RED	A
98	Point	42	28	2	02	00000000	RED	B	A	98	Point	28	15	2.5	02	00000000	UNKOWN	RED	A	
99	Point	43	54	3.5	02	00000000	RED	B	A	99	Point	29	66	16.8	02	00000000	UNKOWN	RED	A	
100	Point	44	38	8	02	00000000	RED	B	A	100	Point	30	66	16	11.3	02	00000000	UNKOWN	RED	A
101	Point	45	78	12.8	02	00000000	RED	B	A	101	Point	31	84	24	8	02	00000000	UNKOWN	RED	A
102	Point	46	66	7.8	02	00000000	RED	B	A	102	Point	32	14	1.1	02	00000000	UNKOWN	RED	A	
103	Point	47	58	11.1	02	00000000	RED	B	A	103	Point	33	26	13	6.8	02	00000000	UNKOWN	RED	A
104	Point	48	76	7.1	02	00000000	RED	B	A	104	Point	34	22	3	02	00000000	UNKOWN	RED	A	
105	Point	49	76	6.4	02	00000000	RED	B	A	105	Point	35	17	8	3.2	02	00000000	UNKOWN	RED	A
106	Point	50	18	8.4	02	00000000	RED	B	A	106	Point	36	24	2.8	02	00000000	UNKOWN	RED	A	
107	Point	51	18	1.2	02	00000000	RED	B	A	107	Point	37	18	2.4	02	00000000	UNKOWN	RED	A	
108	Point	52	8	0	02	00000000	NO TREE	NO TREE	C	108	Point	38	8	8.7	02	00000000	UNKOWN	RED	B	
109	Point	53	88	8.8	02	00000000	RED	C	B	109	Point	39	11.3	02	00000000	UNKOWN	RED	B		
110	Point	54	88	8.1	02	00000000	RED	C	B	110	Point	40	11.3	02	00000000	UNKOWN	RED	B		
111	Point	55	48	4.1	02	00000000	RED	C	B	111	Point	41	8	8.8	02	00000000	UNKOWN	RED	B	
112	Point	56	55	8.9	02	00000000	RED	C	B	112	Point	42	8	8.8	02	00000000	UNKOWN	RED	B	
113	Point	57	55	8.9	02	00000000	RED	C	B	113	Point	43	8	8.8	02	00000000	UNKOWN	RED	B	
114	Point	58	55	8.9	02	00000000	RED	C	B	114	Point	44	8	8.8	02	00000000	UNKOWN	RED	B	
115	Point	59	55	8.9	02	00000000	RED	C	B	115	Point	45	8	8.8	02	00000000	UNKOWN	RED	B	
116	Point	60	26	8	02	00000000	RED BUD	YES	C	116	Point	46	7	8	3.4	02	00000000	UNKOWN	RED	B
117	Point	61	26	2.8	02	00000000	RED	C	B	117	Point	47	8	3.2	02	00000000	UNKOWN	RED	B	
118	Point	62	48	3.8	02	00000000	RED	C	B	118	Point	48	8	3.2	02	00000000	UNKOWN	RED	B	
119	Point	63	38	3.1	02	00000000	RED	C	B	119	Point	49	8	4.2	02	00000000	UNKOWN	RED	B	
120	Point	64	38	4	02	00000000	RED	C	B	120	Point	50	8	4.1	02	00000000	UNKOWN	RED	B	
121	Point	65	55	3.8	02	00000000	RED	C	B	121	Point	51	8	3.1	02	00000000	UNKOWN	RED	B	
122	Point	66	58	2.5	02	00000000	RED	C	B	122	Point	52	8	7.3	02	00000000	UNKOWN	RED	B	
123	Point	67	15	2.3	02	00000000	RED	C	B	123	Point	53	8	3.8	02	00000000	UNKOWN	RED	B	
124	Point	68	28	8	02	00000000	RED	C	B	124	Point	54	8	6.8	02	00000000	UNKOWN	RED	B	
125	Point	69	28	8	02	00000000	RED	C	B	125	Point	55	8	6.8	02	00000000	UNKOWN	RED	B	
126	Point	70	38	0	02	00000000	NO TREE	NO TREE	C	126	Point	56	8	8	8	02	00000000	UNKOWN	RED	B
127	Point	71	38	4.1	02	00000000	RED	C	B	127	Point	57	48	3.9	02	00000000	ALSTHARE	RED	B	
128	Point	72	25	2.4	02	00000000	RED	C	B	128	Point	58	34	4.7	02	00000000	CONKOR REES	RED	B	
129	Point	73	48	3.4	02	00000000	RED	C	B	129	Point	59	66	11.8	02	00000000	UNKOWN	RED	B	
130	Point	74	22	3.3	02	00000000	RED	C	B	130	Point	60	16	6	02	00000000	UNKOWN	RED	B	
131	Point	75	48	8.8	02	00000000	RED	C	B	131	Point	61	66	16	8	02	00000000	UNKOWN	RED	B
132	Point	76	22	3.3	02	00000000	RED	C	B	132	Point	62	38	3.8	02	00000000	UNKOWN	RED	B	
133	Point	77	22	3.3	02	00000000	RED	C	B	133	Point	63	38	3.8	02	00000000	UNKOWN	RED	B	
134	Point	78	22	3.3	02	00000000	RED	C	B	134	Point	64	38	3.8	02	00000000	UNKOWN	RED	B	
135	Point	79	22	3.3	02	00000000	RED	C	B	135	Point	65	38	3.8	02	00000000	UNKOWN	RED	B	
136	Point	80	22	3.3	02	00000000	RED	C	B	136	Point	66	38	3.8	02	00000000	UNKOWN	RED	B	
137	Point	81	22	3.3	02	00000000	RED	C	B	137	Point	67	38	3.8	02	00000000	UNKOWN	RED	B	
138	Point	82	22	3.3	02	00000000	RED	C	B	138	Point	68	38	3.8	02	00000000	UNKOWN	RED	B	
139	Point	83	22	3.3	02	00000000	RED	C	B	139	Point	69	38	3.8	02	00000000	UNKOWN	RED	B	
140	Point	84	22	3.3	02	00000000	RED	C	B	140	Point	70	38	3.8	02	00000000	UNKOWN	RED	B	

After collecting soil samples in five different locations, we were unable to tell if there was fill from the previous football field. We were able to clarify that this area is indeed a wetland and that our projected path will be inside the floodplain.

Our projection of the flood plain involves us moving three small arboretum trees to a different location on the floodplain. Because they are small they will transfer more easily then the larger arboretum tree on the cut bank of the projected path.

By mapping out all of the trees within the floodplain we were able to project a path that would involve the least destruction of natural habitat. The meander we added to the Delaware run emulates its original path in order to start the processes of de-channelization.

Maps:





DELAWARE RUN

 Delaware Run Current



DELAWARE RUN PROJECT

 PROJECTED PATH 2014

Goals for Buildings and Grounds: (Excerpt from Peter Schantz E-Mail)

Delaware run maintenance issues to be considered during a renovation project

March 10, 2014

1. Fix wall on south bank at Sandusky Street bridge
2. Fix wash out east of bridge support
3. Re-engineer bridge at Edgar (span will likely increase and support and landing reworked)
4. Clean out accumulated plant material and trash
5. Repair or remove leaning south wall of run between 2 pedestrian bridges
6. Identify if data or other infrastructure still runs through concrete raceway between bridges
7. Re-engineer bridge east of Edgar (span will likely increase and support and landing reworked)
8. Repair cave in of North side wall east of eastern most pedestrian bridge
9. Install maintainable banks where retaining walls are to be removed





Short Term Goals:

River Clean Up (Still Not Complete, See 2013 fingerprint)



Ecological Studies (Still Not Complete, See 2013 fingerprint)

Buildings and Grounds wall restoration and removal:



Tree Identification:

2014 we mapped the trees next to the run, still need to determine tree types. Nancy Murray and David Johnson sent us information and will be able to help further identify these tree species.

Contacts: namurray@owu.edu dmjohnso@owu.edu

Material Sent: <http://blog.owu.edu/delawarerun/?p=83&preview=true>

Soil Samples:

We were able to begin the process of soil samples but our testing was mostly inconclusive. We were trying to determine if there was fill put down to level this area for the OWU practice field. We suggest further analysis to determine whether this was in fact leveled, by doing more soil samples.

Long Term Goals:

Time and resources allowing, the Delaware Run on Campus could become not only a healthy stream environment, but also an outdoor area for classes from the sciences to the philosophy to promote projects from species study to sound ecology. Eventually, provided it is the best option, the Run could even be dechannelized and restored to its previous state. (Fall 2013 team Pg. 5)

Continue the work on the area with hopes on actually moving the Run. We would like to see the run moved in such a way that it provides a more approachable nature scape and wet land research area. Due to the projection of the run we would like to see a nice over look platform for student to be able to relax and study next to this wonderful water feature on OWU campus.

This general idea is to provide both a platform and a retaining wall to prevent the run from meandering too much towards OWU campus. Idea:



Conclusion:

This project started out with a lot of moving parts, and could have easily become overwhelming. However, after a little bit of brainstorming and using the direction set from the previous group, we were able to figure out how we would include our fingerprint for the spring 2014 semester. During the project our group learned the many different parts of ArcGIS, including gathering and organizing the data so that it could be mapped. Our group contributed this semester to the Delaware Run project by mapping out the trees. Then we were able to project a new path where the run could be moved with the least amount of damage to the arboretum trees. We finished up by taking some preliminary soil samples and gathering all the data we received. This will hopefully give the next group a clear idea to what the next actions will be to further this project. This project has been a very good learning experience for our group because it helped us realize to take the project in smaller parts rather than taking on multiple parts at once. It was very enjoyable to work on this project in a group and push ourselves to exceed our expectation and achieve something we all feel very proud of.



Streams to Dreams Team Spring 2014 OWU:

L-R: Zachary Siefker, Ali Smith, Max Kerns, and Wilson Taylor

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