

Oak Orchard Public Meeting Agenda

☞ Opening Remarks:

Representative Ruth Briggs King

Senator Gerald Hocker

Frank Piorko – Director, DNREC Division of
Watershed Stewardship

☞ Introductions

☞ Presentation of Oak Orchard Coastal Engineering Evaluation

Brooks Cahall, Drainage Program Manager, DNREC

☞ Public Comment Panel Discussion

Brooks Cahall

Stephen Wright P.E. DNREC Drainage Program

Mary Roman P.E., URS

Mike Powell, Hazard Mitigation Program
Manager, DNREC





Oak Orchard Coastal Drainage Engineering Evaluation

Presented by:

Brooks Cahall, Drainage Program Manager

October 29, 2015

Discussion Topics

- ž Project Objectives
- ž Study Area
- ž Community Outreach
- ž Identification of Drainage Deficiencies
- ž Proposed Solutions
 - Relevant Agency
 - Ranking Criteria
- ž Review of Concept Designs
- ž Next Steps

Project Objective

DNREC contracted with URS to:

- ∅ Evaluate existing drainage problems and provide recommendations to DNREC for Drainage Improvements to in the Oak Orchard Community
- ∅ Focus of the study was to develop small to medium scale drainage solutions to reduce the frequency and duration of flooding.

Project Objectives

Flooding, Drainage, or Stormwater?

Flooding

is the submergence of land that is normally dry and can be caused by rainfall or tidal events



Drainage

Removal of runoff over an acceptable period of time which is typically 24-48 hours



Stormwater Management

Management of increased runoff caused by a change in land use.



Study Area



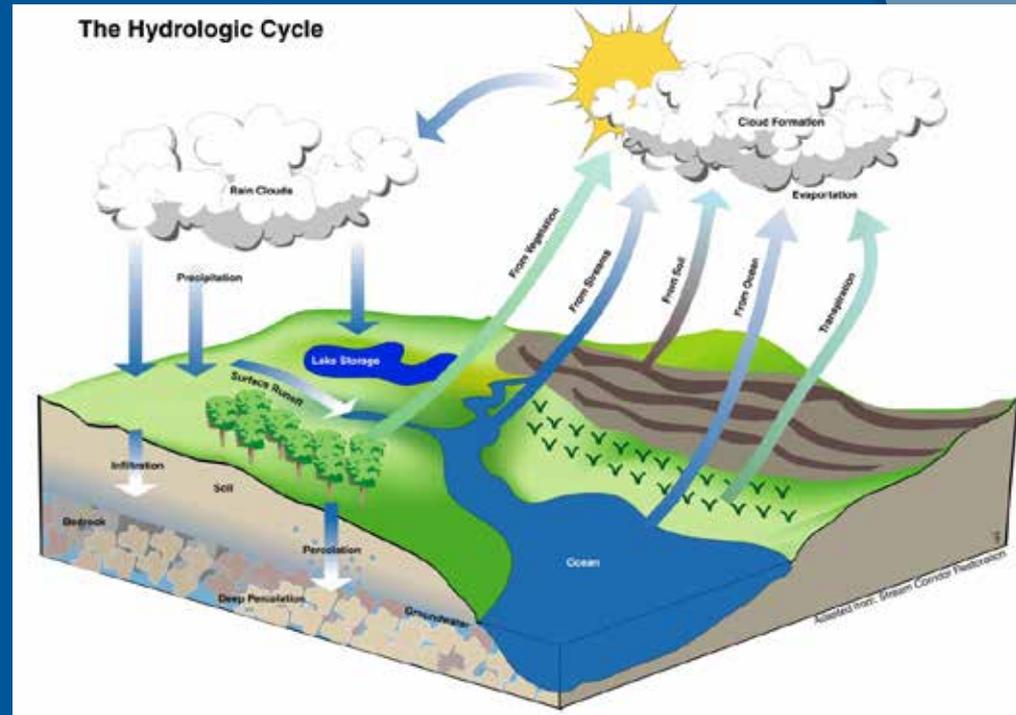
Community Outreach

- ž Public Meetings
 - July 16, 2013
 - October 9, 2013
- ž Site Visits
 - Residents
 - During & After Storms
- ž Survey
 - Sent to 994 Property Owners
 - Received 76 responses



Hydrologic Analysis

- ~ Understanding of the Rainfall-Runoff relationship for the watersheds in the Study area
- ~ Results will be used to design solutions.
- ~ Rainfall-Runoff is only part of the equation in tidal systems
- ~ Analyzed Small and Large rainfall events



Proposed Solutions

- ž Identified Concerns were evaluated in the field by URS engineers.
- ž Concerns were then grouped into 31 proposed solutions
- ž Relevant Agency was identified by DNREC.
 - DNREC, DeIDOT, Private Landowner
- ž Solutions were prioritized using ranking criteria

Relevant Agency

- ž DNREC staff reviewed proposed solutions and identified which particular agency should take the lead.
 - DNREC - 19
 - DELDOT - 3
 - Homeowner Implementation – 8
- ž For Example DNREC doesn't build roads so those types of projects will be handed over to DeIDOT.
- ž Some solutions can be achieved by a particular landowner on their property and DNREC will provide appropriate technical assistance



Prioritization / Ranking Criteria

- ž Originally Developed by Drainage Subcommittee of Delaware Bay Beach Work Group
- ž Public, State, & Legislative Input
- ž Simplified to remove redundancies and account for survey response data.

Prioritization / Ranking Criteria

Table 6.2: Ranking Criteria for Proposed Solutions

Prioritization Category	Description	Score
PUBLIC SAFETY IMPACTS		
Number of Questionnaires with Observations	0 to 3	0
	4 to 9	6
	10 or more	12
Ingress and Egress	Does not affect	0
	Small vehicles may not be able to pass (6 inches or less of water) ^{1,2}	6
	Road impassible (6 inches or greater) ^{1,2}	12
TECHNICAL CRITERIA		
Frequency of Drainage/Flooding (as reported in questionnaires)	Occurs less frequently than every 10 years	2
	Every 2-10 years	4
	Yearly	6
	Several times per year	8
	Monthly	10
Flooding Severity	Yard/driveway flooding	4
	Nuisance road flooding	8
	Structural flooding/road closure	12
Complexity of Solution	Significant impact to utilities, roads (closure), business (closure or interruption), or drainage	0
	Minor impact to utilities, roads (partial closure), or drainage	4
	No impact to utilities, roads, or drainage	8
Easement/Right of Way Requirement	Solution entirely on private property, or requiring more than four easements through private property	0
	Solution primarily on public property, with one to three easements through private property	4
	Solution entirely public property (e.g., DeIDOT, DNREC, U.S. Department of Interior)	8

Prioritization / Ranking Criteria

ENVIRONMENTAL/ECOLOGICAL IMPACTS		
Environmental Impact of Proposed Solution	Construction in wetlands or streams, or involves removal of more than 10 trees	0
	Construction on edge of wetlands or streams, or involves removal of 1-9 trees	3
	No impact	6
Environmental Permitting	Required	0
	Not required	6
AGRICULTURAL IMPACTS		
Agricultural Impact	Long term	0
	Short term	4
	None	8
PUBLIC HEALTH IMPACTS		
Septic System Impact	Long term	0
	Short term	4
	None	8
MISCELLANEOUS IMPACTS		
Project Cost	High	0
	Medium	4
	Low	8
Maintenance Cost	High	0
	Medium	4
	Low	8

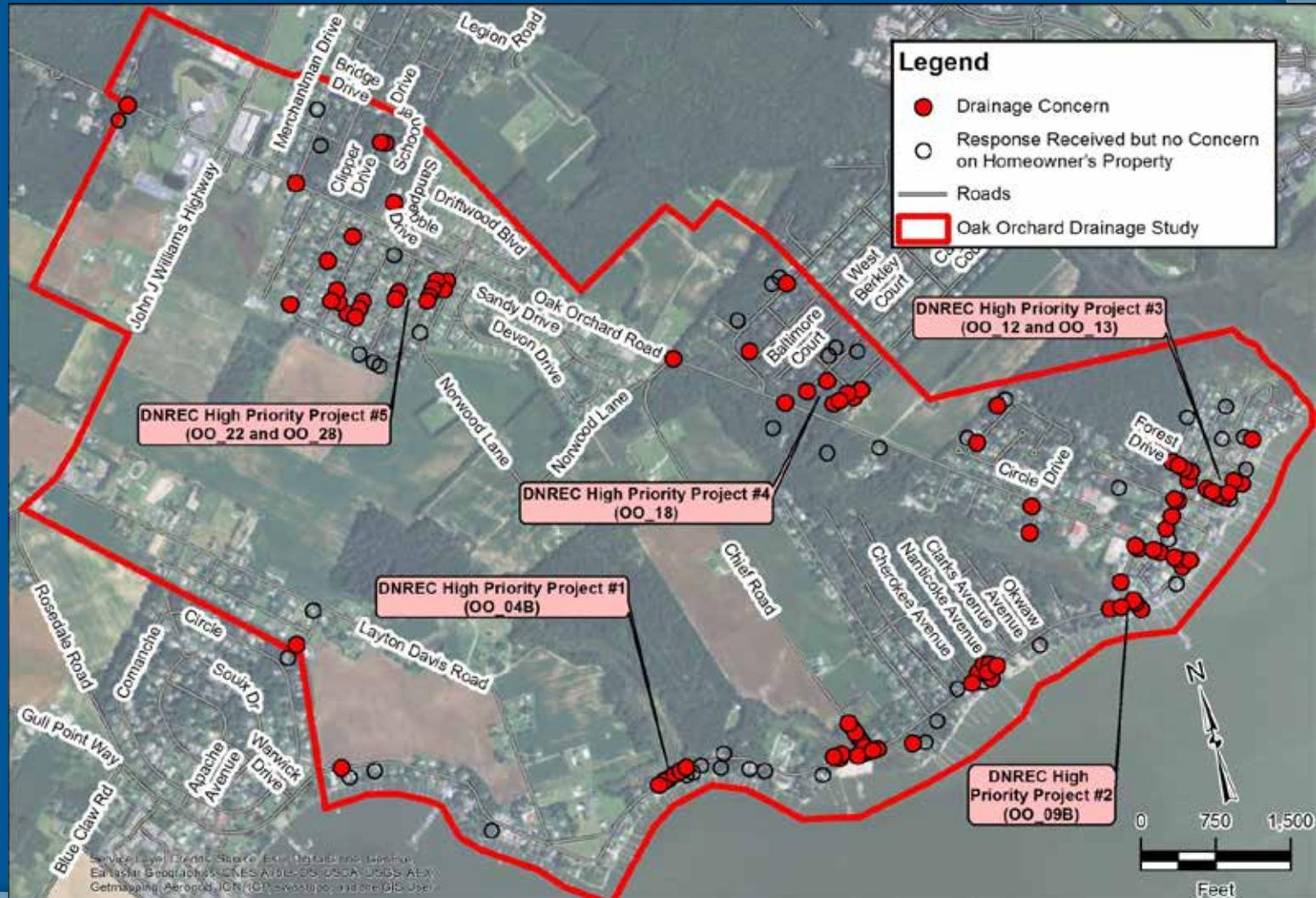
¹ If there are two or more access roads, multiply score by 0.5
² If there is one access road, multiply score by 1

Selection of High Priority Solutions

Based Selection of Projects on the following Factors:

- Relevant Agency (DNREC Only)
- Project Complexity
 - Several high ranked solutions can easily be designed & implemented with DNREC/DeIDOT staff
- Interdependence of Solutions
 - Upgrades to Oak Meadows Storm Drain would likely worsen flooding at river road if not addressed

High Priority Solutions

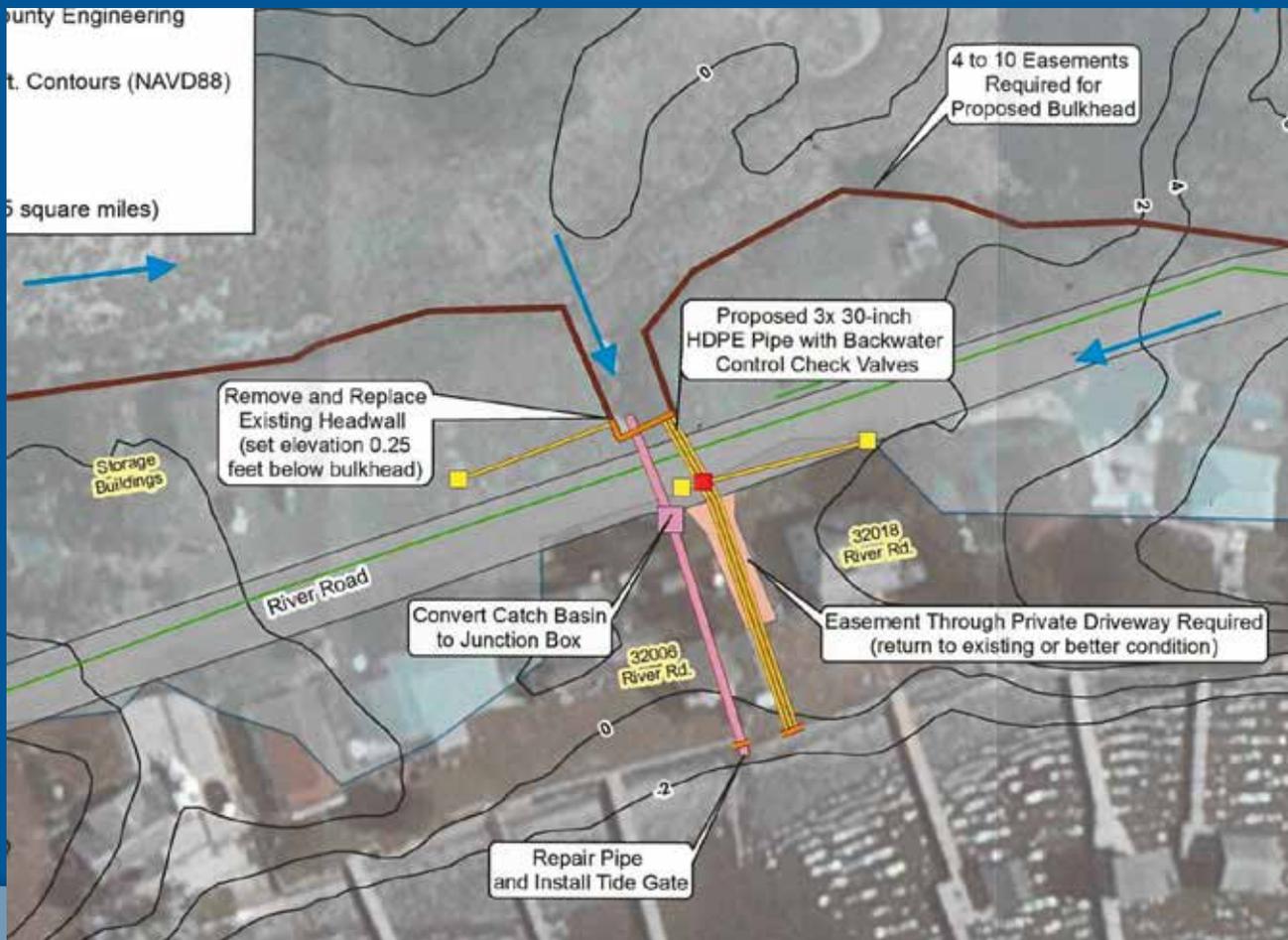


High Priority Solutions

Project	Location	Total Cost
Project #1 (OO_04B)	River Road 2000' West of Chiefs Road	\$945,000
Project #2 (OO_09B)	Intersection of Cerise Avenue & River Road	\$951,000
Project #3 (OO_12 & OO_13)	Mercer Avenue and Forest Drive	\$218,000
Project #4 (OO_18)	Southwest Corner of Captains Grant	\$76,000
Project #5 (OO_22 & OO_28)	Oak Meadow Drive	\$918,000

Project #1

River Road 2,000' West of Chiefs Road (OO_O4B)



Project Highlights

- Replace Culvert w/ 3-30" culverts
- Backflow Prevention
- Bulkhead to help prevent back bay flooding

Costs

Eng.	\$ 120,000
Const.	\$ 825,365
Total	\$ 945,365

Project #2

Intersection of Cerise Avenue & River Rd. (OO_09B)



Project Highlights

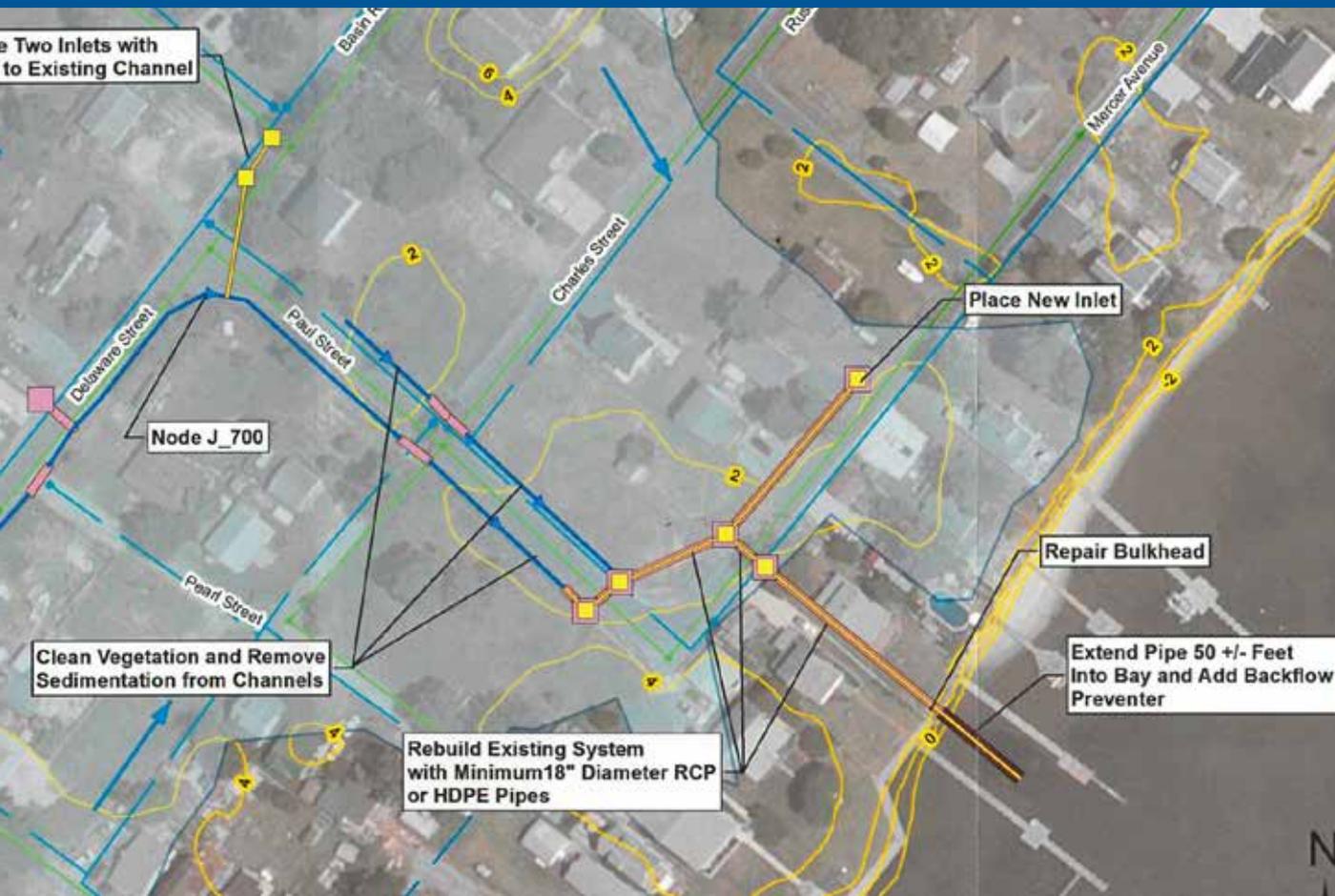
- Add 3-36" culverts
- Backflow Prevention
- Bulkhead to help prevent back bay flooding

Costs

Eng.	\$ 120,000
Const.	\$ 831,048
Total	\$ 945,365

Project #3

Mercer Avenue & Forrest Drive (OO_12 & OO_13)



Project Highlights

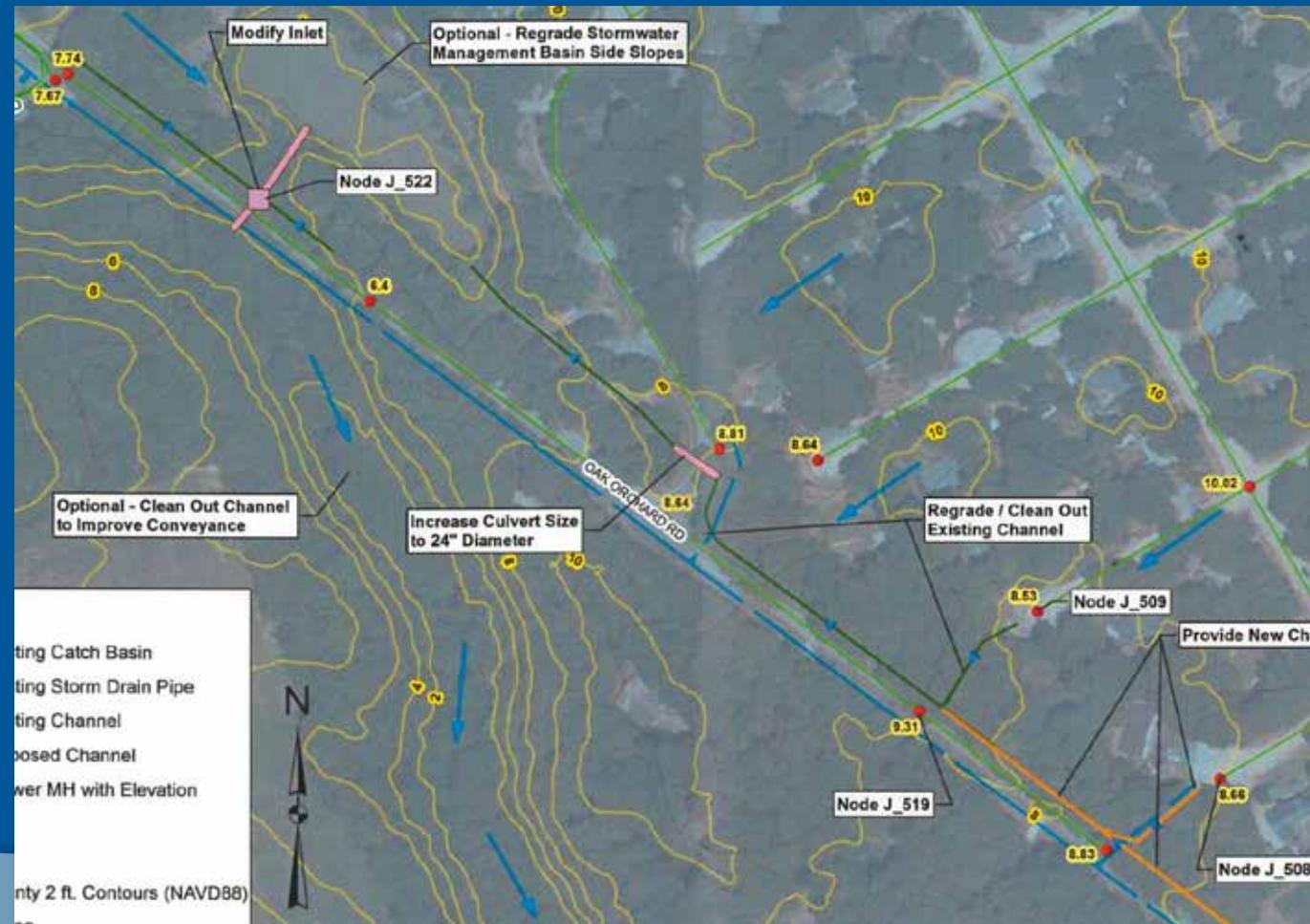
- Extend Pipe
- Backflow prevention
- Repair Bulkhead
- Replace storm drain
- Regrade ditches
- New inlets

Costs

Eng.	\$ 50,000
Const.	\$ 168,330
Total	\$ 218,330

Project #4

Southwest Corner of Captains Grant (OO_18)



Project Highlights

- Regrade existing Channels
- Construct New Channels
- Modify Inlet

Costs

Eng.	\$ 20,000
Const.	\$ 55,750
Total	\$ 76,000

Project #5

Oak Meadows (OO_22 & OO-28)



Next Steps

- ž Proceed with engineering to produce construction documents for the 5 high priority projects
- ž Drainage Program staff will reach out and provide technical assistance to landowners with solutions identified as “Homeowner Implementation”
- ž Drainage Program Staff to work with landowners and DeIDOT staff as appropriate to address small high ranked solutions.
- ž Identify opportunities to fund construction / implementation
 - State Budget Process
 - Grants
 - Loans



Public Comments & Questions

Contact Information

Brooks Cahall, Drainage Program Manager

brooks.cahall@state.de.us

Stephen Wright P.E., Engineer

stephen.wright@state.de.us

Karl Workman, Project Planner

karl.workman@state.de.us

Drainage & Stormwater Assistance Line (302) 855-1930

Drainage Program, Georgetown Field Office (302) 855-1930

<http://www.dnrec.delaware.gov/swc/Pages/DrainageTaxDitchWaterMgt.aspx>

Mike Powell, Hazard Mitigation Program

michael.powell@state.de.us

302-739-9921

