

Surname	Centre Number	Candidate Number
Other Names		0



**GCSE**

4242/02



S15-4242-02

**GEOGRAPHY  
(Specification B)  
FOUNDATION TIER  
UNIT 2  
SECTION B**

P.M. WEDNESDAY, 3 June 2015

1 hour 30 minutes

For Examiner's use only		
Part	Maximum Mark	Mark Awarded
A	27	
B	22	
C	11	
SPaG	4	
<b>Total</b>	<b>64</b>	

This paper is to be given out after Section A has been collected in.

**ADDITIONAL MATERIALS**

Resource folder.

**INSTRUCTIONS TO CANDIDATES**

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all parts of this question**.

Write your answers in the spaces provided in this booklet.

If additional space is required you should use the lined pages at the end of this booklet. The question number(s) should be clearly shown.

**INFORMATION FOR CANDIDATES**

The number of marks is given in brackets [ ] at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication used in your answer that involves extended writing (**Part C**).

In addition, your ability to spell, punctuate and use grammar accurately will be assessed in your answer to **Part C**.

This paper examines the impact of coastal flooding and how the state of New Jersey in the USA is trying to manage this problem.

	<b>Marks</b>
<b>Part A:</b> considers the growth of population and urban areas in New Jersey and how an increase in coastal flooding is affecting this area.	27
<b>Part B:</b> considers <b>three</b> options for managing coastal flooding in New Jersey.	22
<b>Part C:</b> asks you to advise the government of New Jersey which option is the most sustainable way to manage the coastline of New Jersey.	11+4
<b>Total marks</b>	<b>64</b>

### Part A

*You are advised to spend about 30 minutes on this part.*

*In this part you will consider the growth of population and urban areas in New Jersey and how an increase in coastal flooding is affecting this area.*

- (a) Study the maps on **page 2** of the separate **Resource Folder**.

Circle the **three** correct answers in the following passage.

[3]

New Jersey is located in the **north-west** / **south** / **east** of the USA. It has a coastline next to the **Gulf of Mexico** / **North Atlantic Ocean** / **Pacific Ocean**. It has borders with three states which are Pennsylvania, **Florida** / **Virginia** / **Delaware** and New York State.

(b) Study the graphs on **page 3** of the separate **Resource Folder**.

(i) Describe New Jersey's actual population growth (1900-2012). Use figures in your answer. [3]

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Population change has led to an increase in urban areas along the coast.

(ii) By how much are urban areas growing each year? [1]

..... hectares per year.

(iii) State which type of land use has declined most as a result of urban growth. [1]

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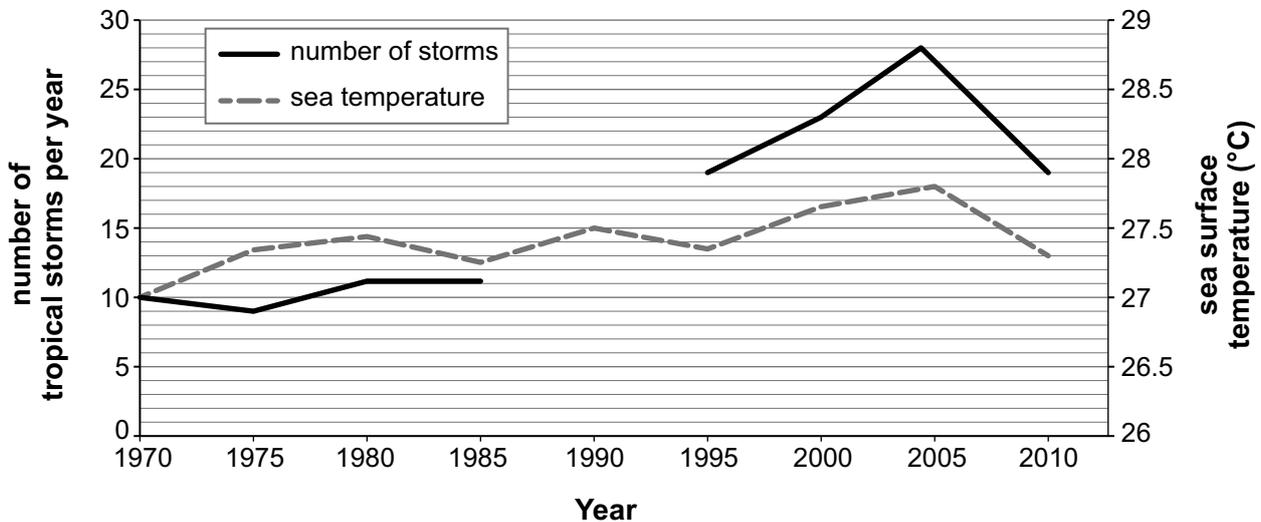
(c) The coastline of the state of New Jersey is affected by tropical storms. Study the information on **page 4** of the separate **Resource Folder**.

(i) Add the correct answers from the box to the following passage to describe how tropical storms are formed. [4]

high	deep	rise	low	anticyclones
medium	cyclones	shallow	tornadoes	fall

Tropical storms are formed by ..... pressure in the atmosphere. These pressure conditions are called .....  
 Changes in air pressure during a tropical storm mean that the sea levels .....  
 Strong winds create large waves which get larger as they get into ..... water along the coast.

Study the graph below.



(ii) Complete the graph above to show that in the year 1990 there were 14 tropical storms. [1]

(iii) Circle the correct answers in the passage below to describe the graph. [3]

In 1970 there were **3 / 5 / 10** tropical storms. The overall trend in the number of storms each year has **increased / decreased / stayed the same**. The year which had the most tropical storms was **1985 / 1995 / 2005**.

(d) Many scientists predict that there will be more coastal flooding in the future. Suggest why there might be an increase in coastal flooding. [3]

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(e) Study the photographs on **page 5** of the separate **Resource Folder**.

(i) Describe the **physical** and **social** effects of the coastal floods of 2012. [4]

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(ii) Suggest why people choose to live in coastal areas that are at risk of coastal flooding. [4]

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27

**End of Part A**

**Part B**

*You are advised to spend about 25 minutes on this part.*

*In this part you will consider three options for managing coastal flooding in New Jersey.*

**Option 1: Retreat the line** (also known as managed retreat). People are moved away from the coast. The coastline will be allowed to retreat naturally to a new position.

Study the information on **page 6** of the separate **Resource Folder**. Seaside Heights is a popular tourist resort.

(a) Describe the location of Seaside Heights. [3]

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(b) Some groups of people support the plan to retreat the line at Seaside Heights. Other groups are against the plan.

- |   |
|---|
| Group 1: Home owners in Seaside Heights             |
| Group 2: Hotel workers in Seaside Heights           |
| Group 3: The town Council in the town of Toms River |
| Group 4: Scientists who study climate change        |

(i) Suggest why **one** of these groups of people may support the plan to retreat the line at Seaside Heights. [3]

Group: .....

Why this group may support the plan to retreat the line.

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- (ii) Suggest why **one** of these groups of people may be against the plan to retreat the line at Seaside Heights. [3]

Group: .....

Why this group may be against the plan to retreat the line.

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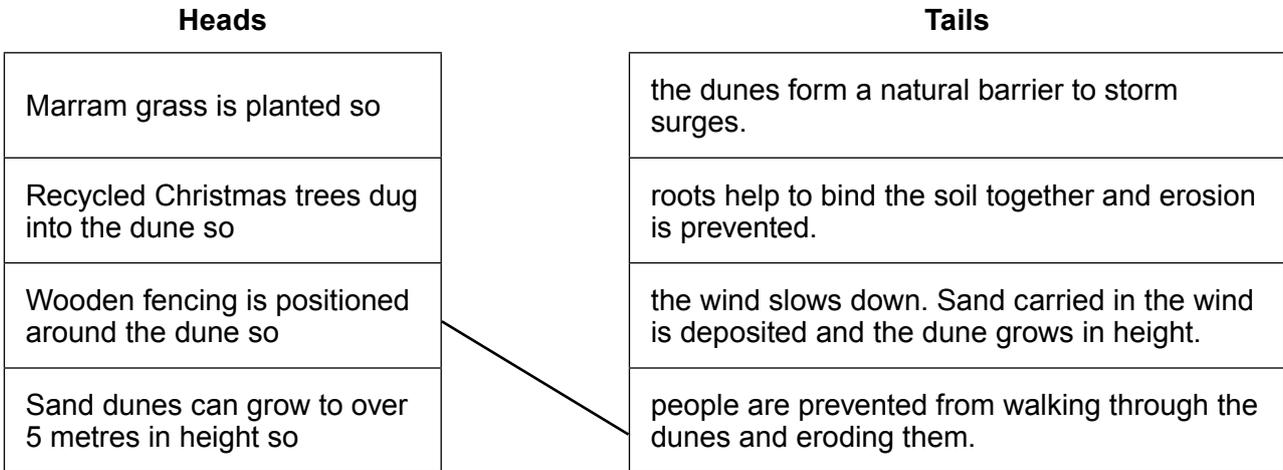
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**Option 2: Hold the line using 'soft' engineering.** A combination of beach nourishment and sand dune stabilisation could be used to protect the resort of Seaside Heights.

(a) Study the information on **page 7** of the separate **Resource Folder**.

- (i) Explain why sand dunes reduce the risk of coastal flooding by joining the heads and tails. One has been done for you. [3]



- (ii) Suggest why local businesses in Seaside Heights might be against a plan to use soft engineering to protect the coast. [3]

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**Option 3: Hold the line using ‘hard’ engineering.** A combination of rock armour and sea walls could be used to protect the resort of Seaside Heights.

(a) Study the information on **page 8** of the separate **Resource Folder**.

(i) Describe how hard engineering protects the coastline from erosion and flooding. [3]

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(ii) Suggest why the government of New Jersey may think it is not sustainable to protect Seaside Heights with a sea wall. [4]

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**End of Part B**

**Part C**

*You are advised to spend **about 35 minutes** on this part.*

*In this part you will advise the government of New Jersey which option is the most sustainable way to manage the coastline of New Jersey.*

The options are:

Option 1: Retreat the line (also known as managed retreat).

Option 2: Hold the line using 'soft' engineering.

Option 3: Hold the line using 'hard' engineering.

Use the Factfile on **page 9** of the separate **Resource Folder** to complete the following matrix to help you organise your ideas. One idea has been added to the matrix for you.

If you choose to use it, you should spend no more than 15 minutes completing the matrix.

Option	Benefits of this option which could make it more sustainable	Problems of this option which could make it less sustainable
Option 1: Retreat the line (also known as managed retreat).	People will pay less money for home insurance if they move inland	
Option 2: Hold the line using 'soft' engineering.		
Option 3: Hold the line using 'hard' engineering.		









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**GCSE**

4242/02-A



S15-4242-02A

**GEOGRAPHY**

**(Specification B)**

**RESOURCE FOLDER UNIT 2, SECTION B**

**FOUNDATION TIER**

P.M. WEDNESDAY, 3 June 2015

# RESOURCE FOLDER

This folder is for use with questions in **Unit 2, Section B Foundation Tier**.

This folder need not be handed in with your answer.

**How should New Jersey State manage coastal flooding?**



**Seaside Heights, New Jersey**



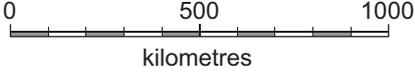
**Seaside Heights was damaged by coastal flooding in 2012**

### The location of the state of New Jersey



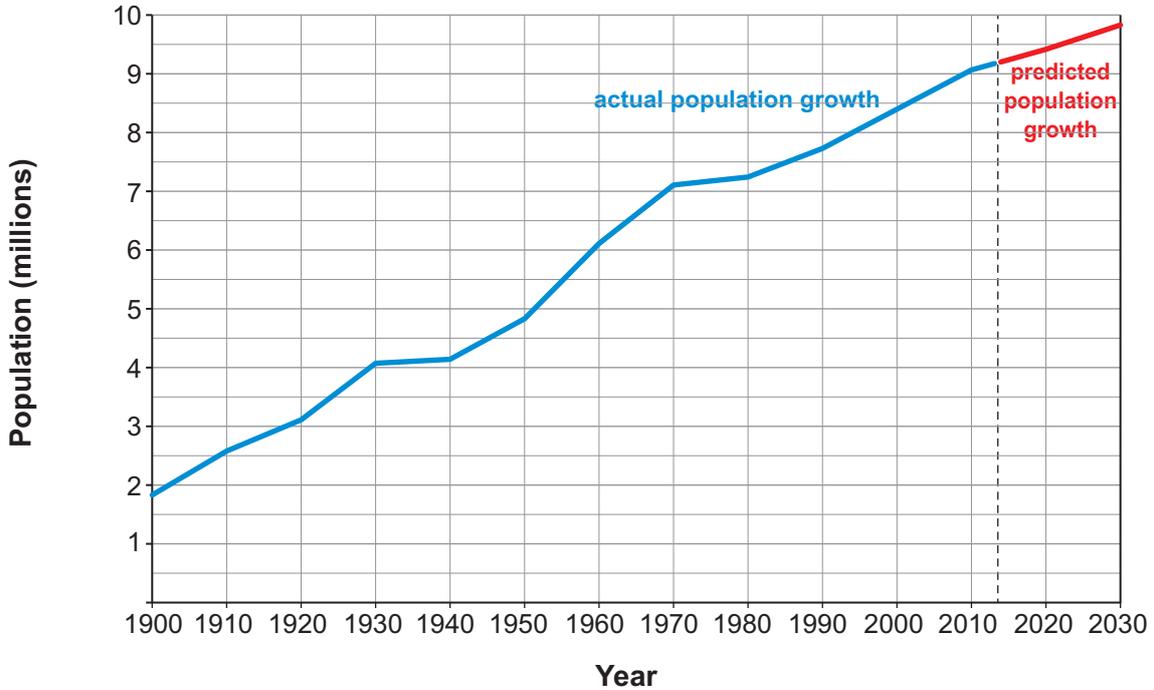
**Key:**

-  New Jersey
-  Major Cities



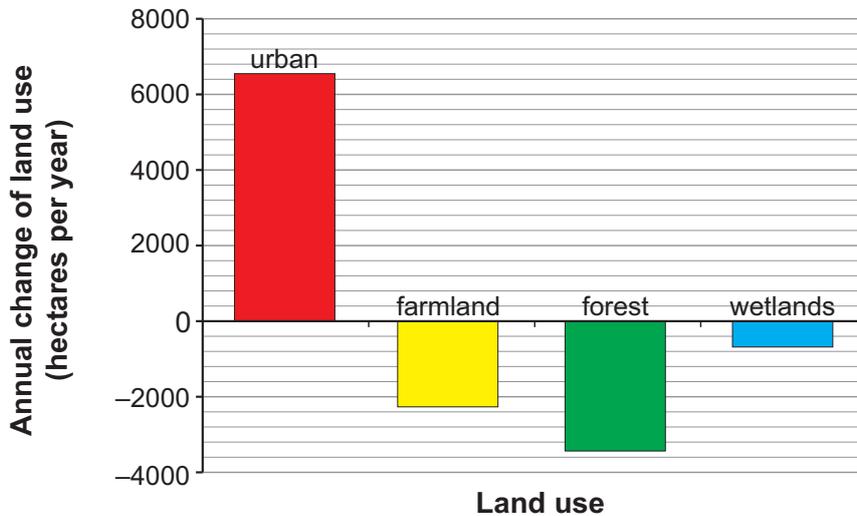
The last official census was 2010. Predictions are given for 2020 and 2030, which are based on current growth rates.

**Graph 1: New Jersey Population**



Source: <http://worldpopulationreview.com/states/new-jersey-population/>

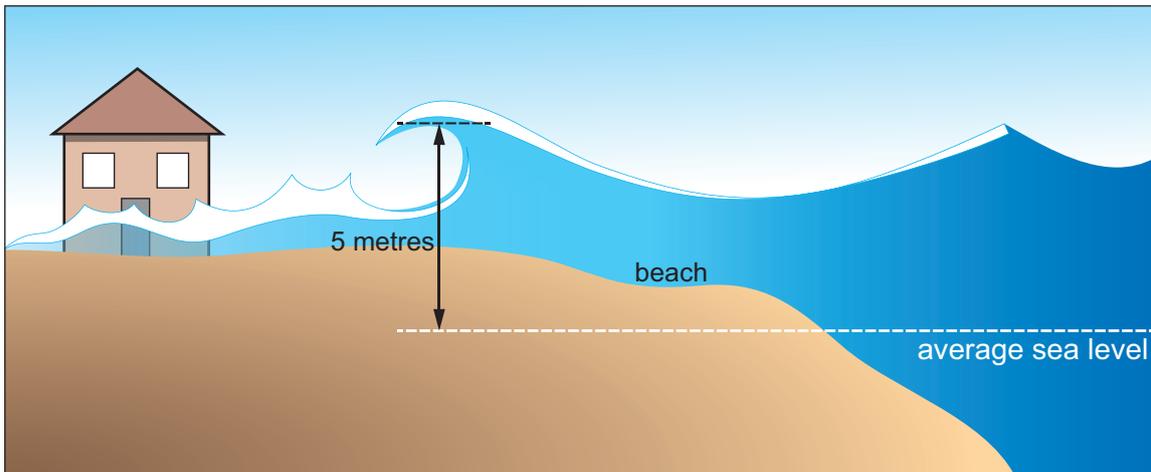
**Graph 2: Annual change of land use in the state of New Jersey, 2002 – 2009 (hectares per year)**



Source: <http://crssa.rutgers.edu/projects/lc/urbangrowth8695/nj-urban-growth.pdf>



Diagram showing a storm surge reaching the coast.



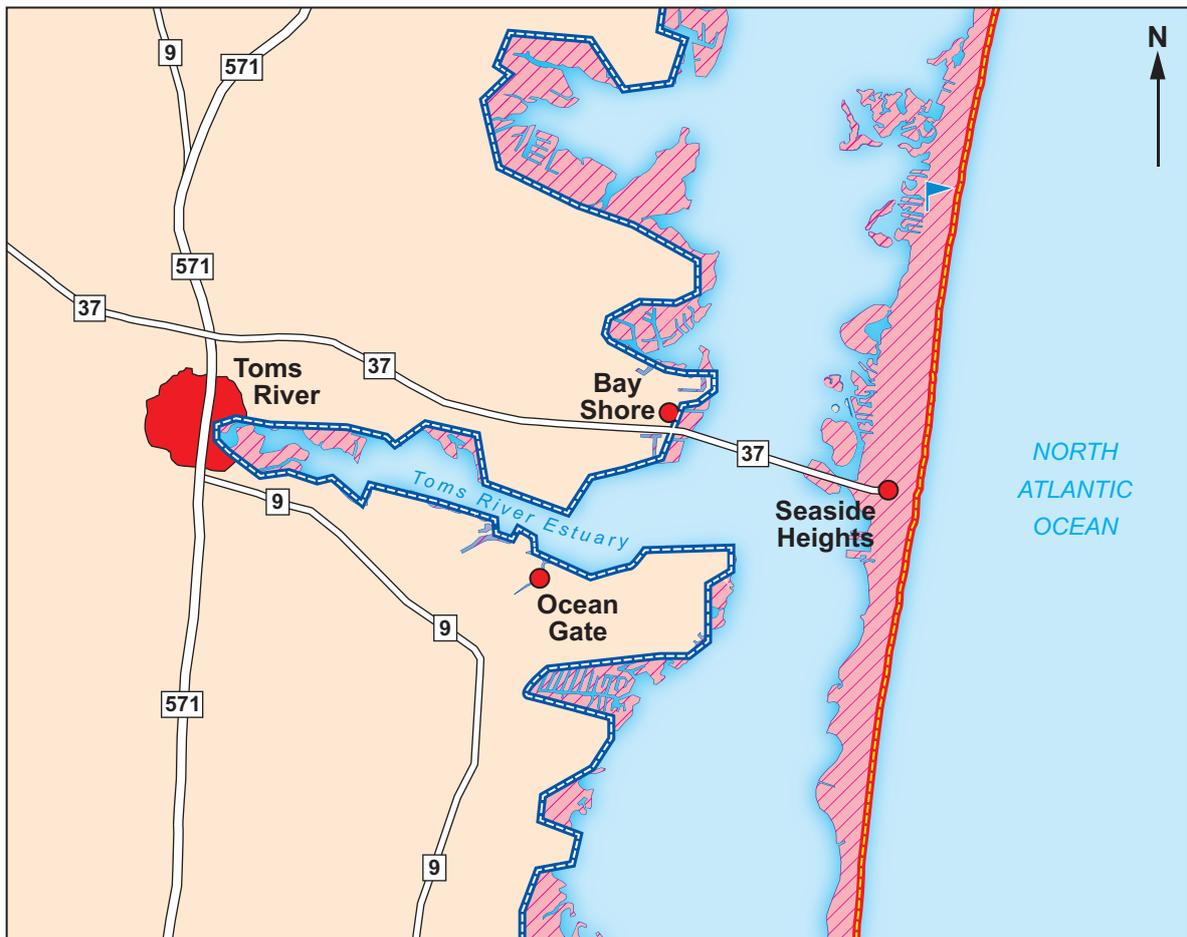
Photographs of Seaside Heights before and after coastal flooding.



Source: <http://coastal.er.usgs.gov/hurricanes/sandy/photo-comparisons/newjersey.php>

The yellow arrow is pointing at the same building in each photograph.

### Option 1: Retreat the line



#### Key:

-  Existing coastline
-  Future coastline (after managed retreat)
-  Coastline that will be lost (due to managed retreat)
-  Road
-  Settlement
-  Golf course

0 5  
kilometres

In 2012 coastal floods killed 37 people in New Jersey and destroyed 340,000 homes.

The US government has given \$648 million in aid. Some of this will be used to compensate people who moved inland from their coastal homes to allow the coastline to retreat.

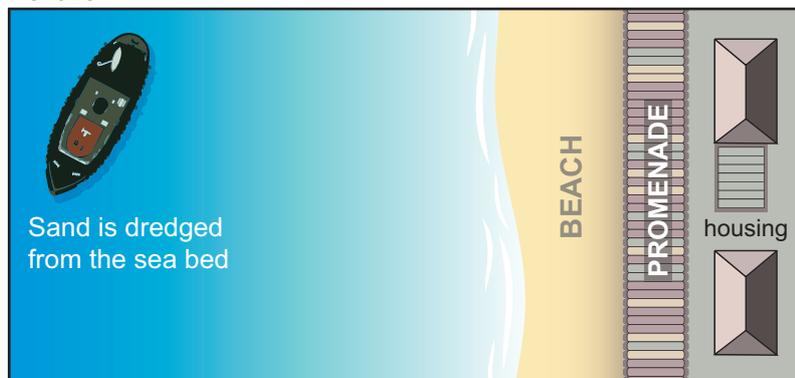
### Option 2: Hold the line using 'soft' engineering

#### Sand dune stabilisation

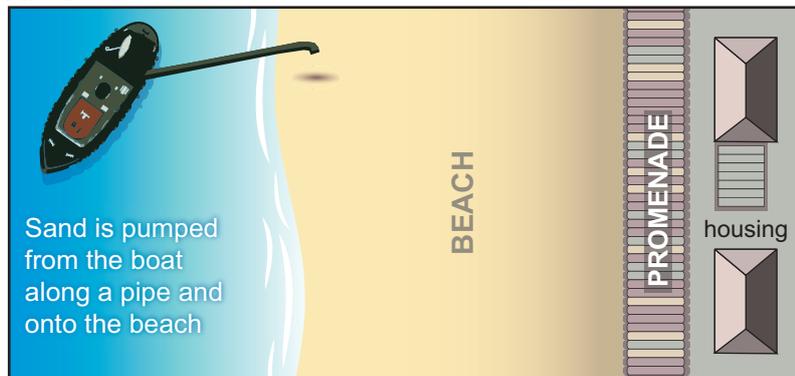


#### Beach nourishment

Before



After



Option 3: Hold the line using 'hard' engineering



## Factfile

### Option 1: Retreat the line (also known as managed retreat)

- Global sea levels are expected to rise by between 50 and 97 cm by 2100.
- The number of people living in coastal areas in New Jersey is expected to increase over the next 20 years.
- 3.7 million North Americans now live within a few metres of the sea.

### Option 2: Hold the line using 'soft' engineering

- This is a relatively cheap option in the short term.
- Home owners say that sand dunes mean they lose their ocean view and it reduces the value of their homes.
- People create paths to break through the dunes which reduces how well the dunes work because sea water can easily break through.

### Option 3: Hold the line using 'hard' engineering

- Sea walls need expensive repairs after 30-40 years.
- The sea wall will only work if there is a large beach in front of it.
- Sea walls were successful in protecting many areas in New Jersey during the 2012 storm surges.

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