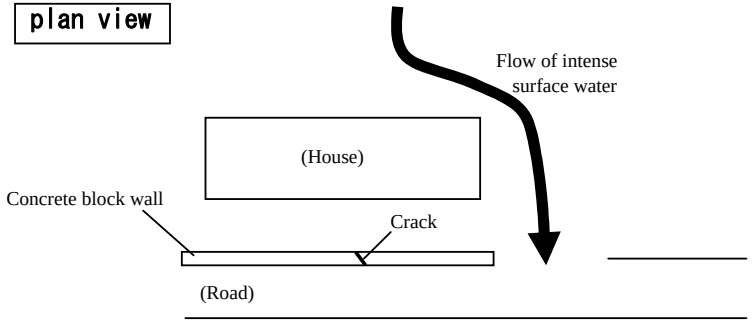
7. Landslide Recording Sheet

General Information Sheet (Other)

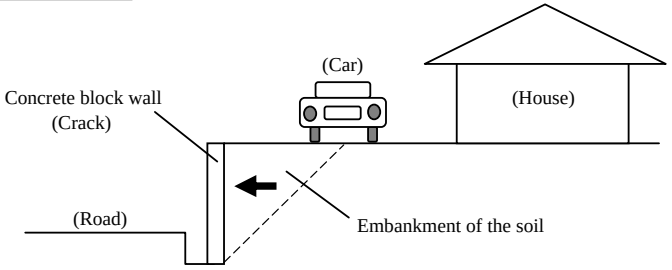
Management number	0 0 0 0 0 0 0 0 0 1	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 14, 2012
Address	Temple Road, Creve Coeur	Type*	Damage of wall	latitude	-20.149417	longitude	57.582472

Schematic sketch

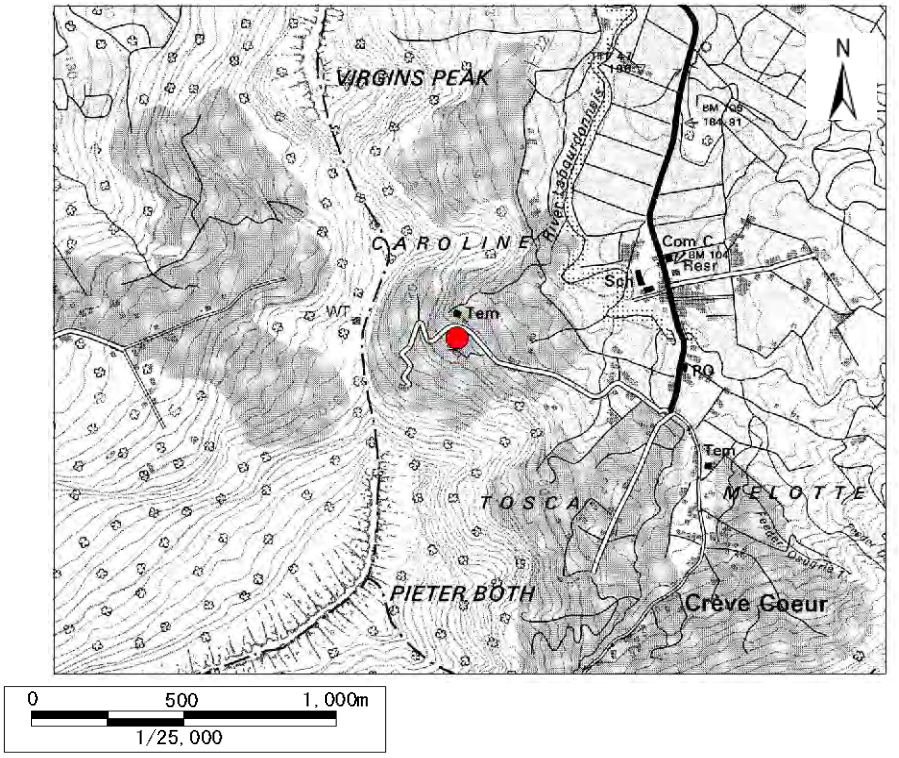
plan view



cross section

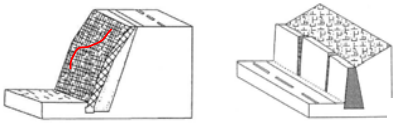


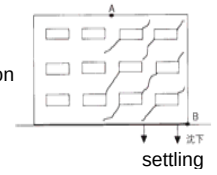
Location map （Scale: 1:25,000)

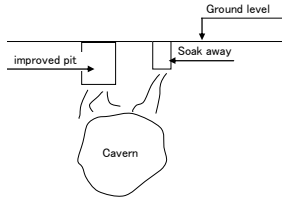


*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other







Mangement number	0	0	0	0	0	0	0	0	0	1

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	(Concrete block) / Concrete
		Stone masonry / Other
	H : Height of the retaining wall	1.2 m
	L : Length of the retaining wall	5.0 m
	D : Thickness of the retaining wall	0.3 m
	Type of the damage	Collapse / Inclination
		Hair crack / (Open crack)
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	m
	L : Length of the cavern	m
	D : Depth of the cavern	m
	Situation above the cavern	improved pit / soak away /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	

[Description]

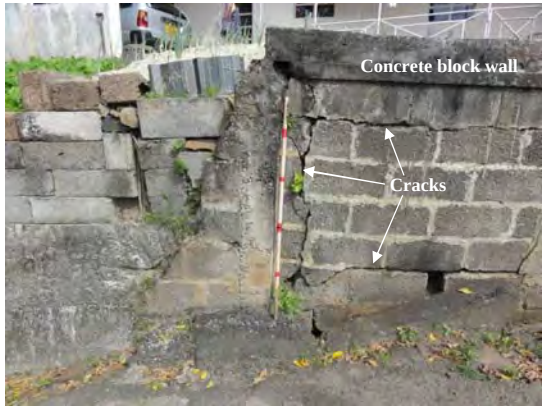
Deformation on the concrete block wall and house caused by embankment deformation at the front yard (parking area) was confirmed. Another problem was inadequate surface drainage causing surface water from mountains to flow directly at houses during heavy rain.
The further detail of these two problems are described as below.
(1) The damage of the concrete block wall
The cracks on the concrete block wall occured during the hurricane of 2005 or 2004. The structure of the wall is weak and has been damaged by the pressure of the embankment and groundwater.
(2) Flow of intense surface water
A large amount of water flows down from the mountain and hit the house which is located at the waterway during heavy rain.

Management Number	0	0	0	0	0	0	0	0	0	1

Photo sheet

Date	*June 14, 2012*

Ph-1 Full view of concrete block wall



Ph-2 The damage of the concrete block wall

Ph-3 The course that the surface water flows through (1)

Ph-4 The course that the surface water flows through (2)

Ph-5 Damage of the drainage of the roadside

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	0	1

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 14, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Retaining wall	1

[The Photo of Countermeasure]

[Description]
There are two problems in this site.

(1) The damage of the concrete block wall
The structure of the wall is weak and has been damaged by the pressure of the embankment and groundwater. It is necessary to change the wall to the stronger structure (e.g., the gravity retaining wall).
(2) Flow of intense surface water
A large amount of water flows down from the mountain and hit the house which is located at the waterway during heavy rain.It is necessary to carry out surface drainage work.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

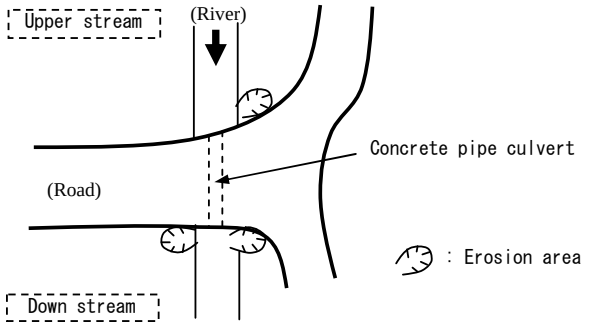
[Description]

General Information Sheet (Other)

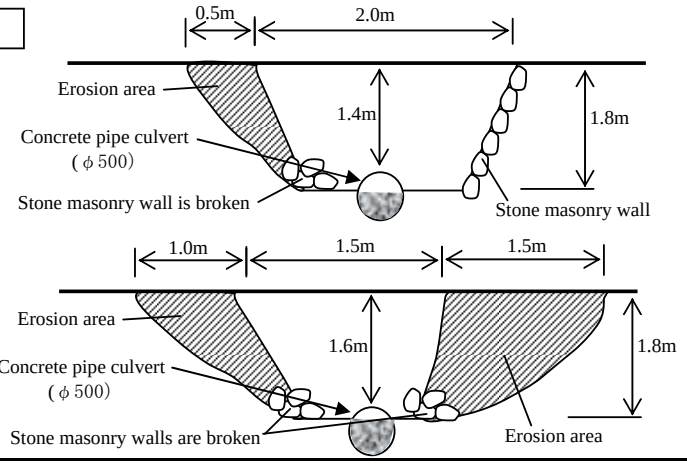
Management number	0 0 0 0 0 0 0 0 0 2		Reporter's name :	Tomoharu IWASAKI	Date of report :	June 29, 2012
Address	Congomah Village Council (Ramlakhan)	Type*	Stream erosion	latitude	-20.153333	longitude 57.597389

Schematic sketch

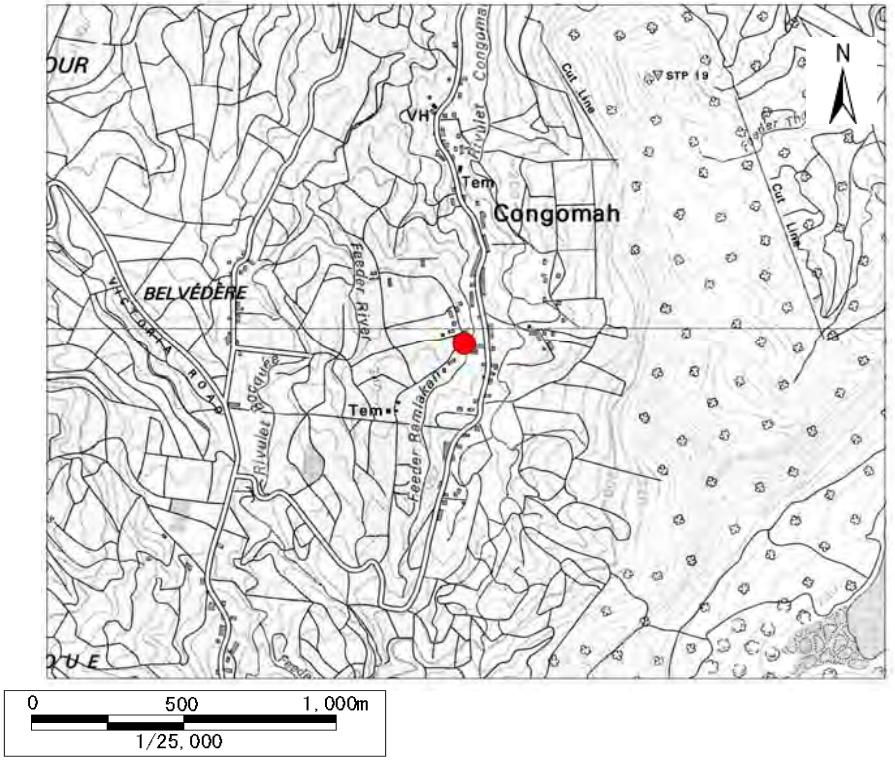
plan view



cross section



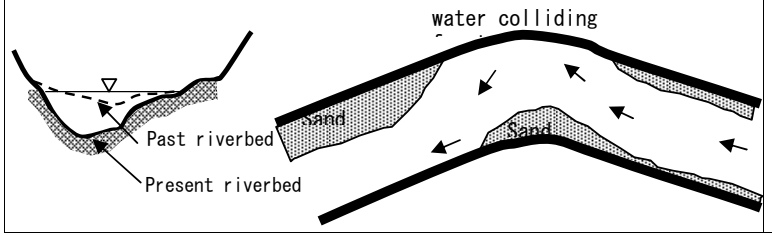
Location map （Scale: 1:25,000)



* **Description of "Type"**

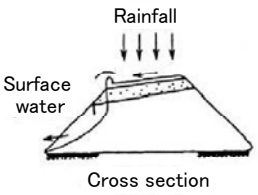
River bank erosion

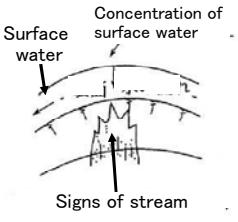
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	0	2

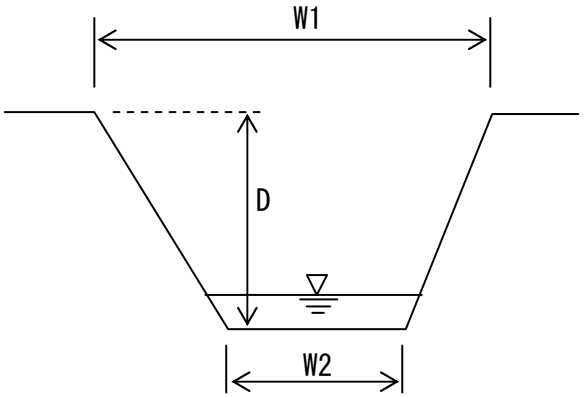
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	2.0 m
				W2 : Width of the riverbed	1.0 m
				D : Depth of the river	1.8 m
			Type	Right bank	Soil or Natural ground / (Artificial structure)
				Left bank	Soil or Natural ground / (Artificial structure)
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	0.5 m
	Type of the damage				(Erosion)
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

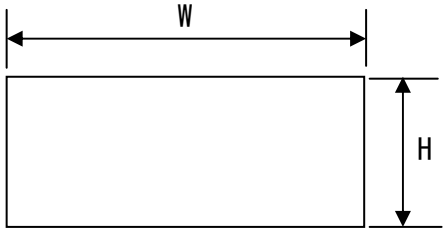
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	✓
		Some effect	
		High effect	



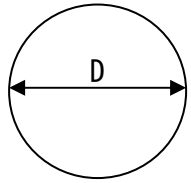
Structure of a river

[Description]

A small stream flows under the road through a concrete pipe culvert, however, because it is too small it causes flooding and bank erosion during heavy rain.
The stone masonry wall built at the both side of riverbanks was destroyed by erosion.Therefore,it is necessary to build a retaining wall for both side of riverbanks and increase the diameter of the pipe culvert.



Box culvert



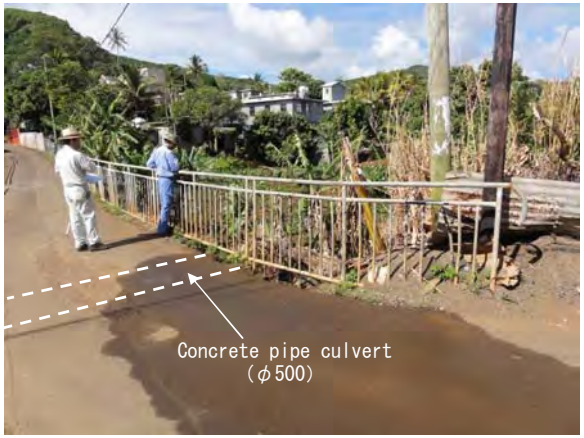
Pipe culvert

Management Number	0	0	0	0	0	0	0	0	0	2

Photo sheet

Date	*June 29, 2012*

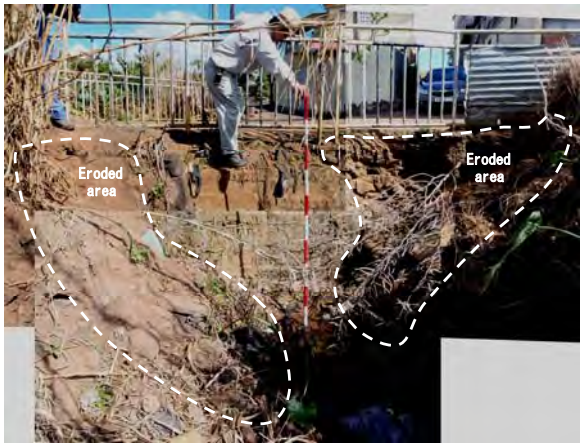
The kinds of countermeasure



Ph-1 Full view (Upper stream)

Ph-2 Full view (Down stream)

Ph-3 Upper stream



Ph-4 Down stream

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	0	2

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 29, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Stone masonry wall	1

[The Photo of Countermeasure]

Stone masonry walls are broken

Stone masonry walls are broken

[Description]
A concrete pipe culvert is installed under the road crossing the small river. However, the size of the pipe culvert is small which causing the flood during heavy rain and bank erosion.
The stone masonry wall built at the both side of riverbanks was destroyed by erosion.Therefore,it is necessary to build a retaining wall for both side of riverbanks and increase the diameter of the pipe culvert.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

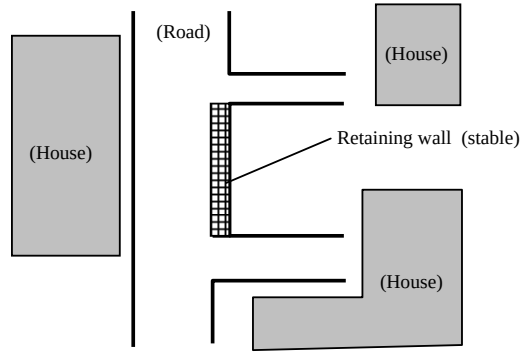
[Description]

General Information Sheet (Other)

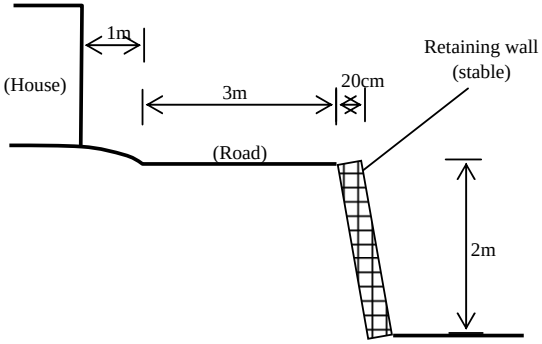
Management number	0 0 0 0 0 0 0 0 0 3		Reporter's name :	Tomoharu IWASAKI	Date of report :	June 29, 2012
Address	Congomah Village Council (Leekraj)	Type*	Damage of wall	latitude	-20.149	longitude 57.597667

Schematic sketch

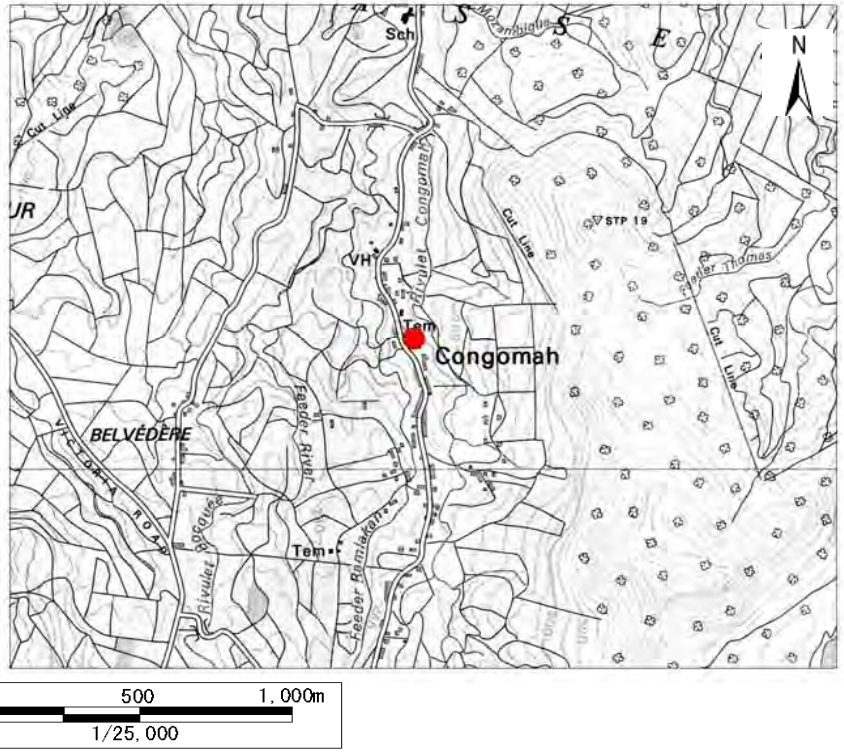
plan view



cross section

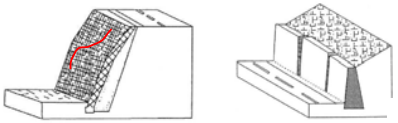


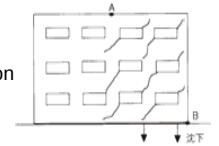
Location map （Scale: 1:25,000)

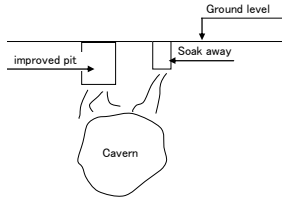


*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other







Mangement number	0	0	0	0	0	0	0	0	0	3

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		Stone masonry / Other
	H : Height of the retaining wall	2.0 m
	L : Length of the retaining wall	15.0 m
	D : Thickness of the retaining wall	0.2 m
	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	m
	L : Length of the cavern	m
	D : Depth of the cavern	m
	Situation above the cavern	improved pit / soak away /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	✓

[Description]

A 1m high retaining wall that was constructed to build the road was reported to be leaning but it was found to be stable and no slope failure was observed.
Therefore, It is not necessary to investigate in detail.

Management Number	0	0	0	0	0	0	0	0	0	3

Photo sheet

Date	*June 29, 2012*

Ph-1 Full view (Retaining wall)

Ph-2 Retaining wall

Ph-3 Retaining wall

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	0	3

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 29, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of lcountermeasure	Number
	Stone masonry	1

[The Photo of Countermeasure]

Ph-1 The retaining wall

[Description]
A 1m height retaining wall that has been constructed to build the road was reported leaning but it was stable and no slope failure has been observed.Therefore, It is not necessary to investigate in detail.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

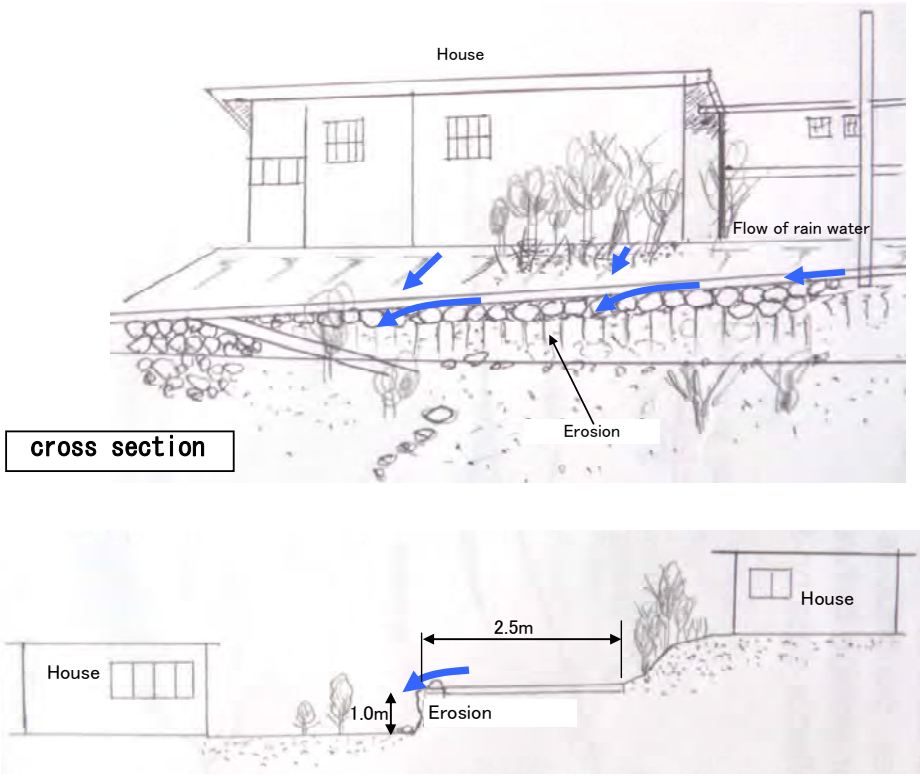
[Description]

A
1

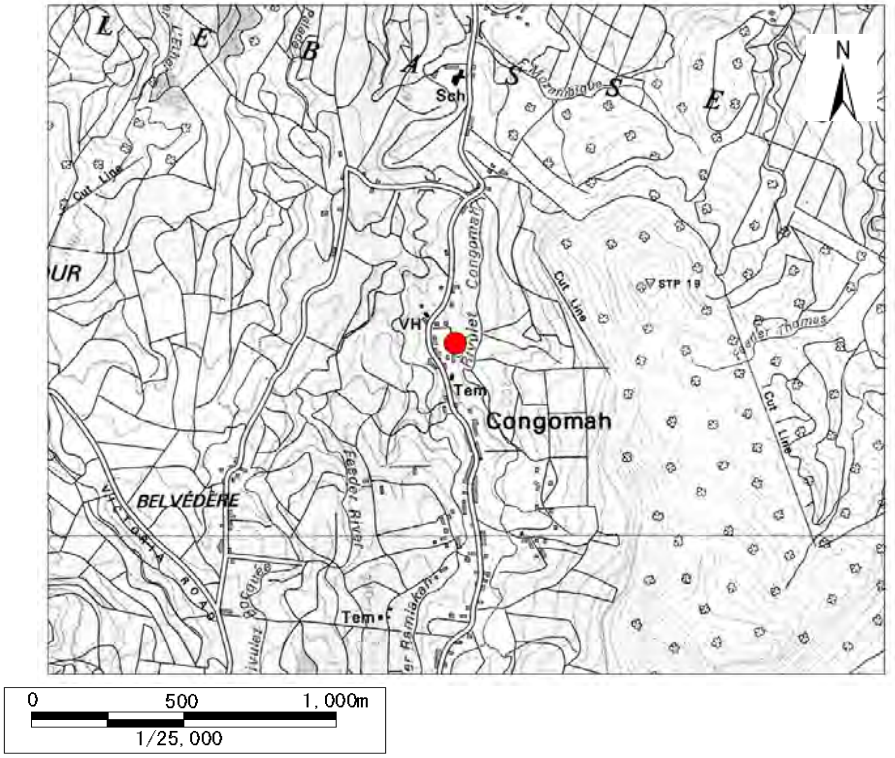
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 0 4	Reporter's name :	Youji /KASAHARA	Date of report :	June 29, 2012
Address	Congomah Village Council (Frederick)	Type*	Damage of wall	latitude	-20.147333	longitude	57.597444

Schematic sketch

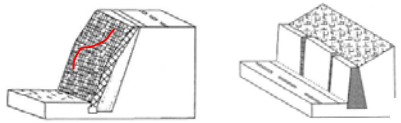


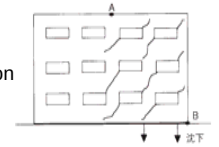
Location map （Scale: 1:25,000)

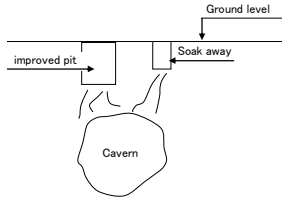


*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other







Mangement number	0	0	0	0	0	0	0	0	0	4

Evaluation sheet

Reporter's name:	*Youji /KASAHARA*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		(Stone masonry) / Other
	H : Height of the retaining wall	1.0 m
	L : Length of the retaining wall	15.0 m
	D : Thickness of the retaining wall	0.3 m
	Type of the damage	(Collapse) / Inclination
		Hair crack / Open crack
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	m
	L : Length of the cavern	m
	D : Depth of the cavern	m
	Situation above the cavern	improved pit / soak away /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	✓
		Some effect	
		High effect	

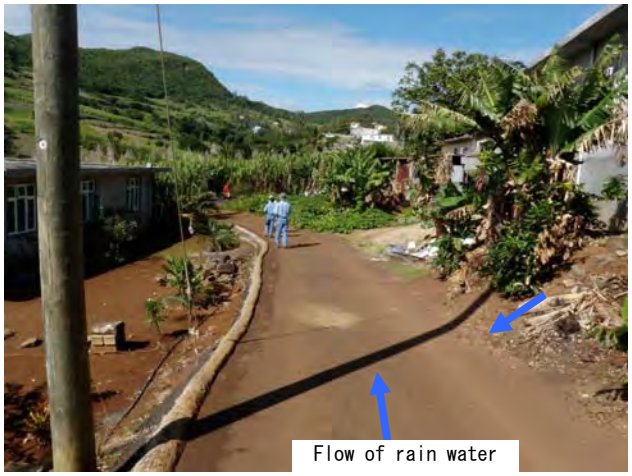
[Description]

The 1m high retaining wall along the road was found to have collapsed due to erosion by surface water flow during rainy season.

Management Number	0	0	0	0	0	0	0	0	0	4

Photo sheet

Date	*June 29, 2012*



Ph-1 Full view of damage of retaining wall

Ph-2 damage in retaining wall by erosion

Ph-3 damage in retaining wall by erosion

Ph-4 Retaining wall that comes off

Ph-6 Sutiation in the back of School (fill-up ground)

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	0	4

Reporter's name:	Youji /KASAHARA	Date of report :	June 29, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of lcountermeasure	Number
	Stone masonry	1

[The Photo of Countermeasure]

None

None

[Description]
The 1m height retaining wall along the road collapsed due to the erosion of surface water flow during rainy season.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshol		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

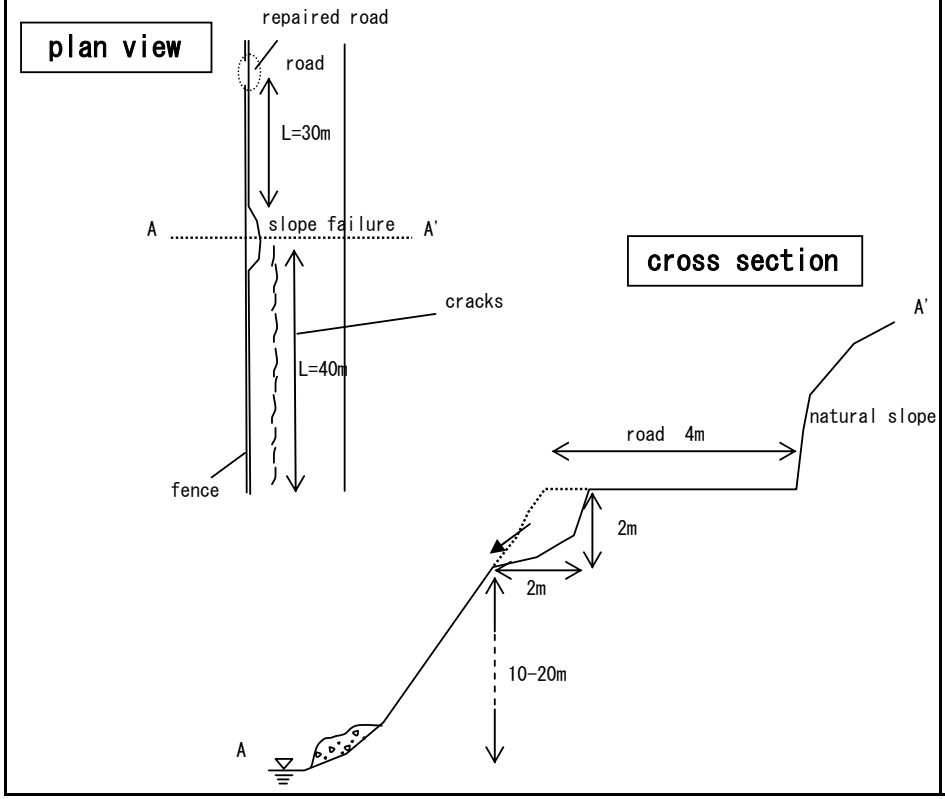
[Description]

General Information Sheet (Other)

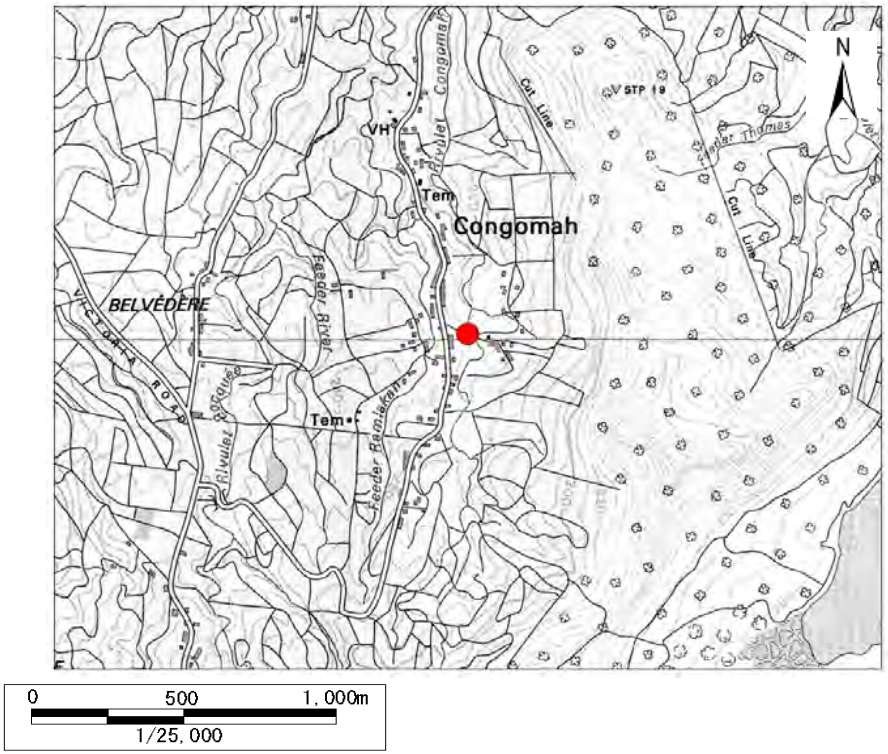
Management number	0 0 0 0 0 0 0 0 0 5	Reporter's name :	Ai Togami	Date of report :	June 29, 2012

Address	Congomah Village Council (Blackburn Lanes)	Type*	Damage of Embankment	latitude	-20.152611	longitude	57.5985

Schematic sketch



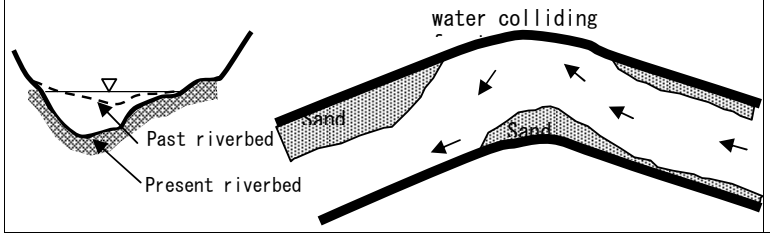
Location map （Scale: 1:25,000)



*** Description of "Type"**

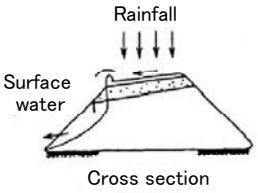
River bank erosion

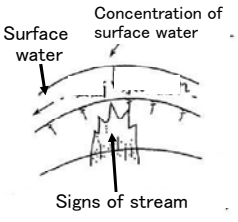
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	0	5

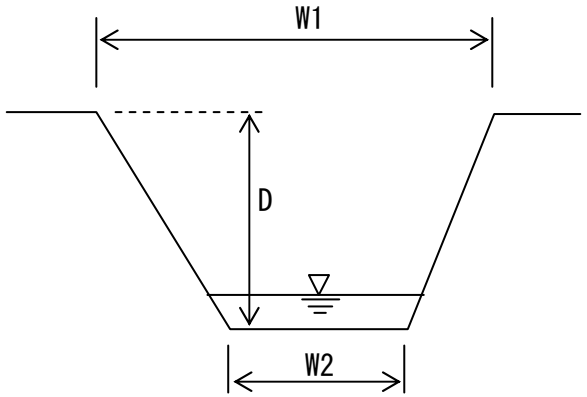
Evaluation sheet

Reporter's name:	*Ai Togami*

[check Point]

Category					Record
Stream	Structure	Figure / size	W1 : Width of the river		m
			W2 : Width of the riverbed		m
			D : Depth of the river		m
		Type	Right bank		Soil or Natural ground / Artificial structure
			Left bank		Soil or Natural ground / Artificial structure
		Box culvert	W : Width		m
			H : Height		m
		Pipe culvert	D : Diameter		m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other (collapse)

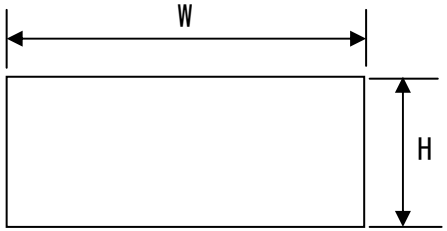
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	✓
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



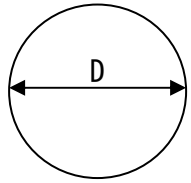
Structure of a river

[Description]

A slope failure was confirmed on the side of the road.
Slope failure is characterized as follows; W=2m, L=2m.
There is a possibility of slope failure in future.
It is necessary to undertake works regarding this road. And, it will be necessary to construct a retaining wall.
Also, there is slope failure in another site. But, the road has been already repaired.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	0	5

Photo sheet

Date	*June 29, 2012*

Ph-1 Full view

Ph-2 slope failure

Ph-3 Transverse Cracks

Ph-3 repaired road of another site

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 0 5	Reporter's name:	*Ai Togami*	Date of report :	*June 29, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]
There is a possibility to expand slope failure in future.
It is necessary for the road to be repaired. And, it will be necessary to construct a retaining wall.
Also, there is slope failure in another site. But, the road has been already repaired.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

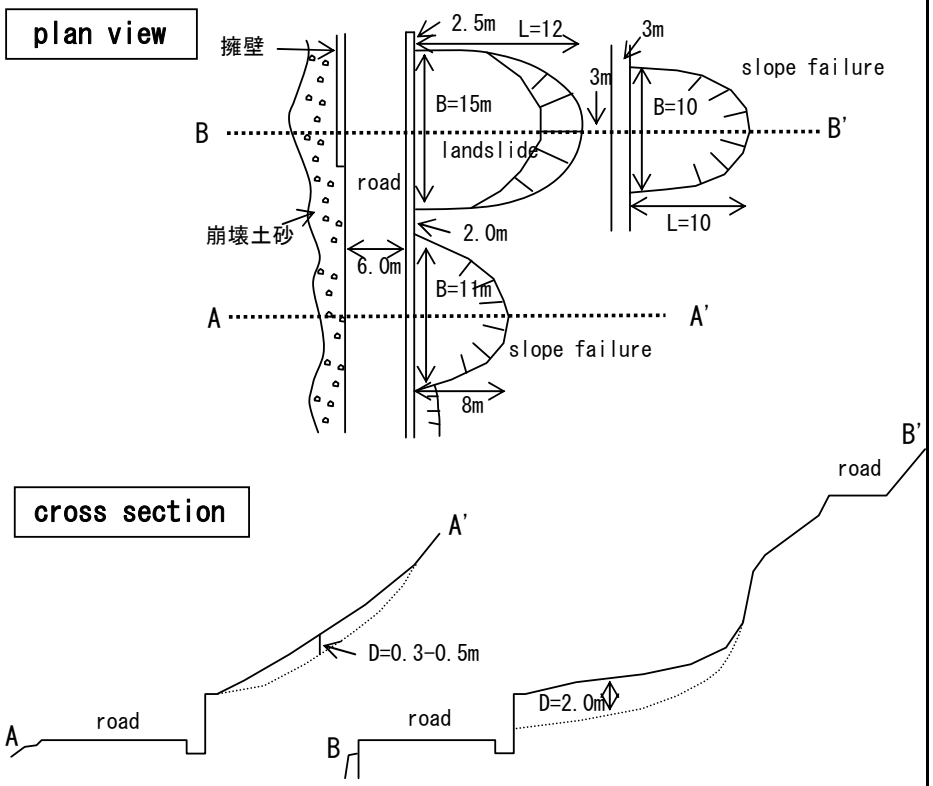
[Land use restrictions in hazard areas]

[Description]

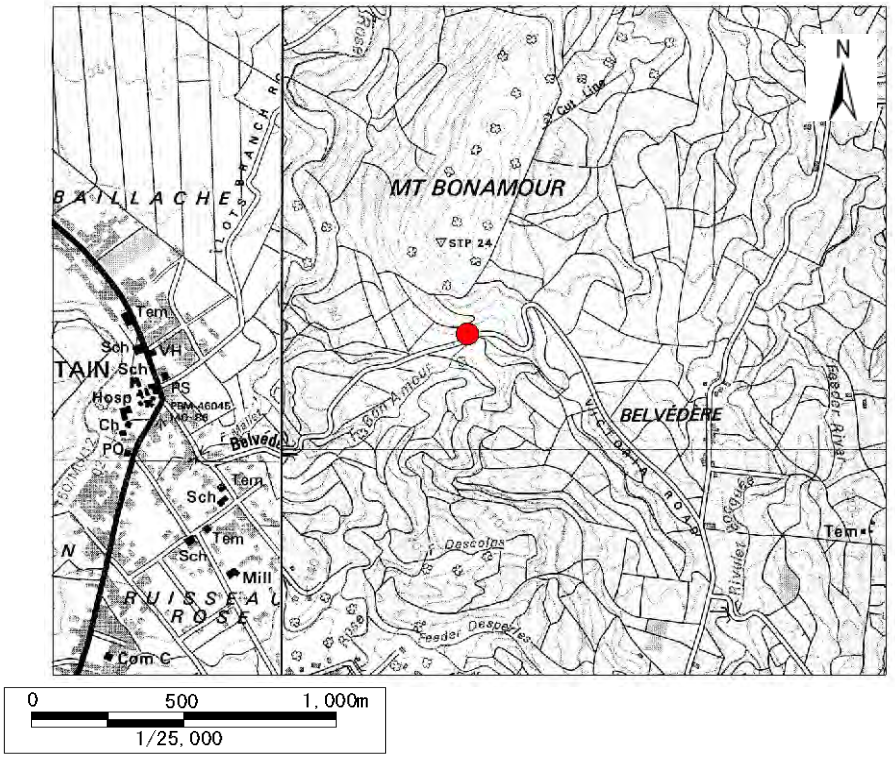
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 0 6			Reporter's name :	Ai Togami	Date of report :	June 14, 2012
Address	Les Mariannes Community Centre (Road area)	Type*	Slope-failure	latitude	-20.168667	longitude	57.590306

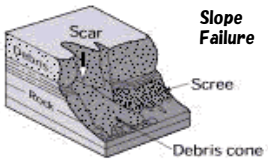
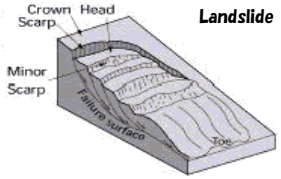
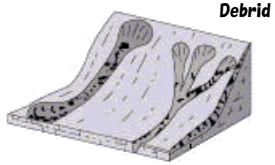
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	0	6

Evaluation sheet

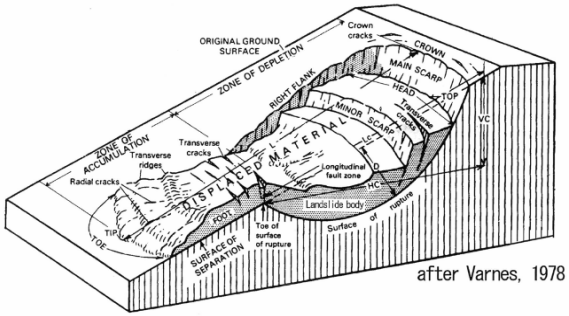
Reporter's name:	*Ai Togami*

[check Point]

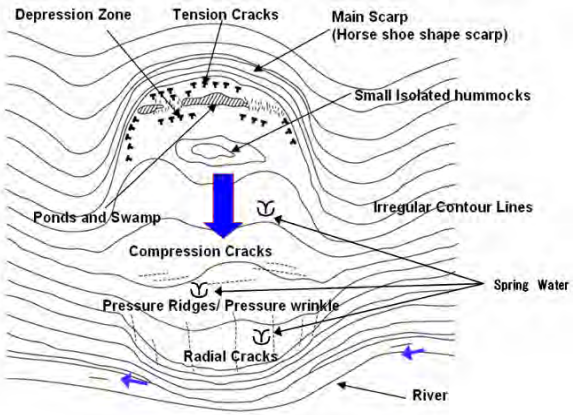
	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(name: , number:)	
		Slight	(name: road , number: 1)	✓
		None		
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			
	Effectiveness of Countermeasure	No effect		
		Some effect		✓
		High effect		

[Description]

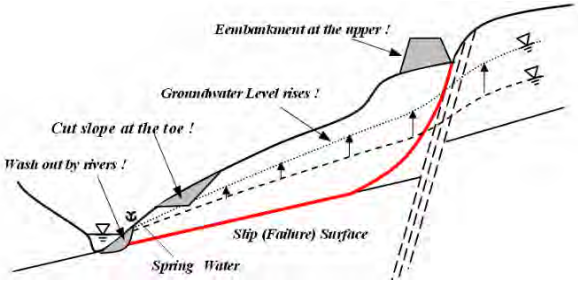
There are a few slope failures and a lanslide in this site. The slope at the roadside collapsed during heavy rain in 2010 and a section of road was washed away. Since then, a retaining wall has been constructed and the site is currently stable.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	0	6

Photo sheet

Date	*June 14, 2012*

Ph-1 Full view of landslide

Ph-2 Main Scarp

Ph-3 landslide

Ph-4 slope failure

Ph-5 slope failure

Ph-6 rocks and gravel by slope failure

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 0 6	Reporter's name:	Ai Togami	Date of report :	June 14, 2012

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
retaining wall	2

[The Photo of Countermeasure]

[Description]
There are few slope failure and a lanslide in this site.The slope at the roadside collapsed during heavy rain in 2010 and washed away the road. Since that, the retaining wall has been constructed and stable at this moment.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number
None	3

Warning Threshol

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

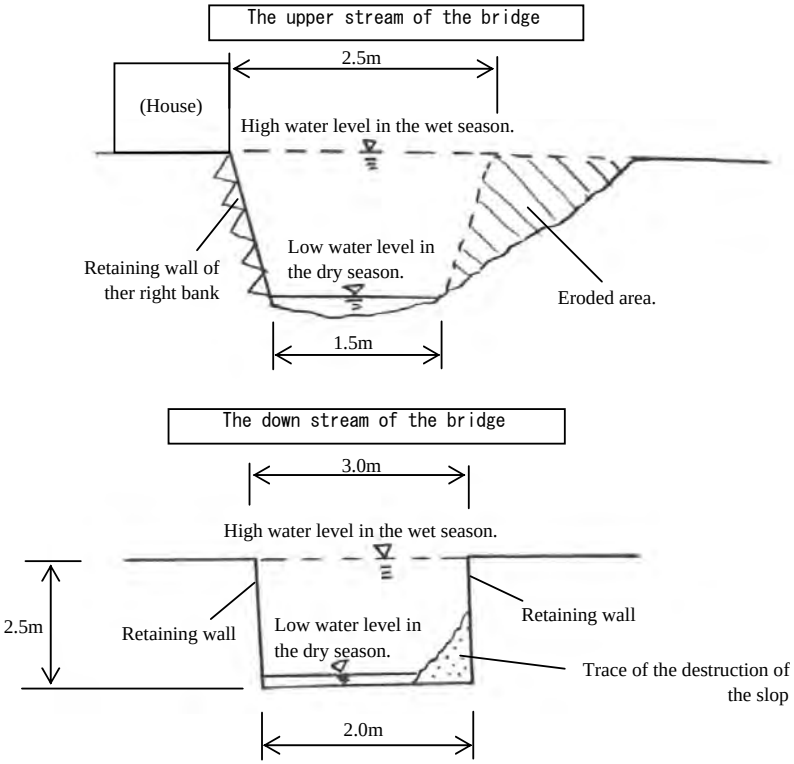
[Land use restrictions in hazard areas]

[Description]

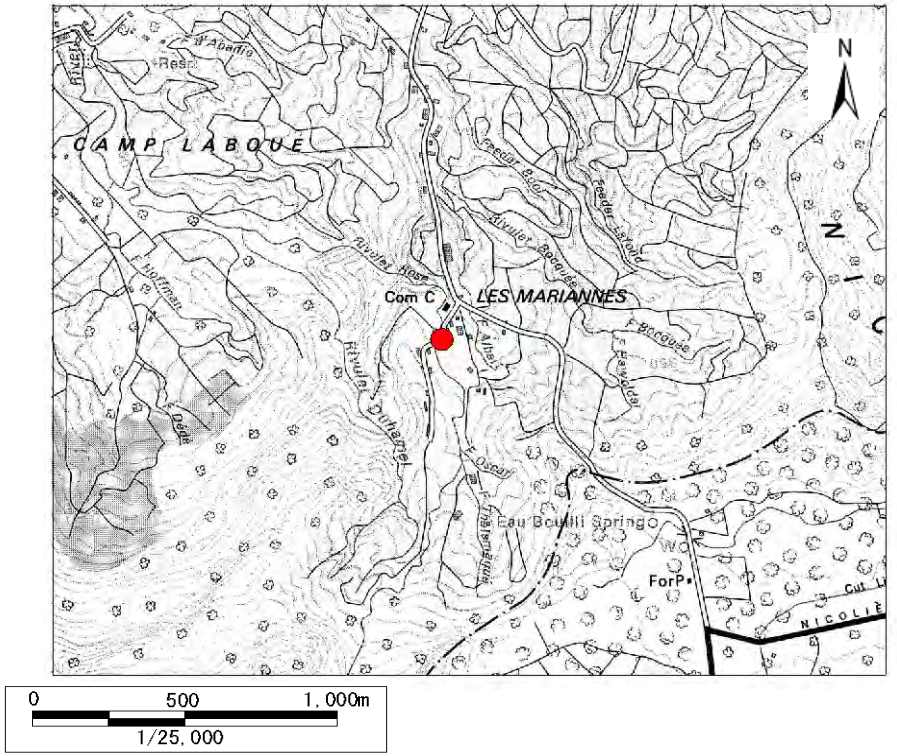
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 0 7	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 14, 2012
Address	Les Mariannes Community Centre (Resident area)	Type*	Stream erosion	latitude	-20.168722	longitude	57.590222

Schematic sketch



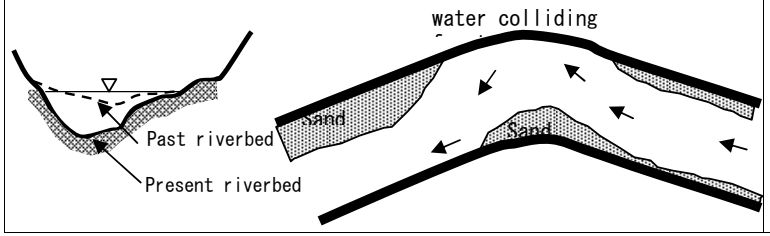
Location map （Scale: 1:25,000)



*** Description of "Type"**

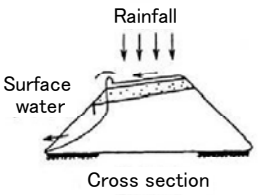
River bank erosion

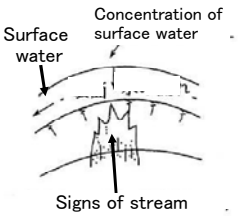
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	0	7

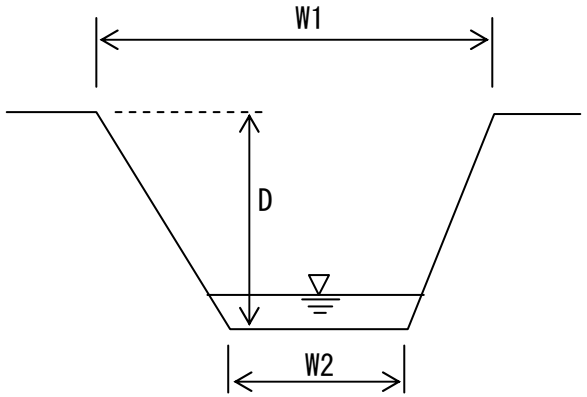
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	2.5 m
				W2 : Width of the riverbed	1.5 m
				D : Depth of the river	2.5 m
			Type	Right bank	Soil or Natural ground / (Artificial structure)
				Left bank	(Soil or Natural ground) / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				(Erosion)
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

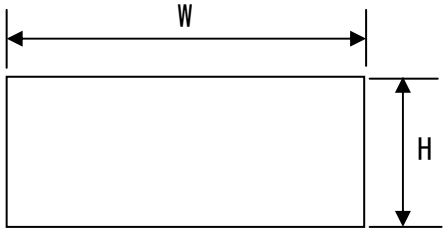
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



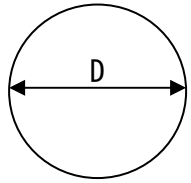
Structure of a river

[Description]

There appeared to be bank erosion on the left bank above the bridge.The upper bank has not been covered by anything while the retaining wall was constructed at the lower bank. In addition, the water level rises in the wet season causing the bank erosion.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	0	7

Photo sheet

Date	*June 14, 2012*

Ph-1 Full view of the river

Ph-2 Eroded area

Ph-3 Concrete wall

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	0	7

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 14, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]

It is necessary to carry out the countermeasures in the left bank of the upper side of the bridge.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshol		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

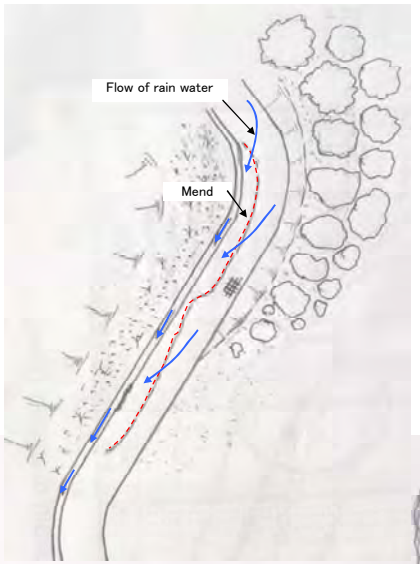
[Description]

General Information Sheet (Other)

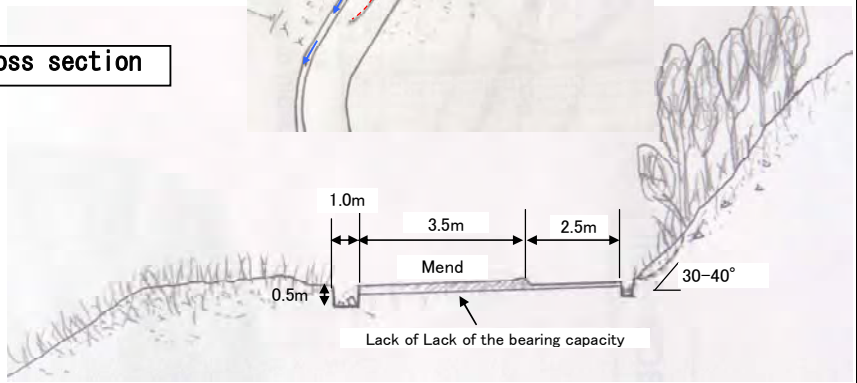
Management number	0 0 0 0 0 0 0 0 0 8		Reporter's name :	Youji /KASAHARA	Date of report :	June 29, 2012
Address	L'Eau Bouillie	Type*	Damage of embankment	latitude	-20.171583	longitude 57.594167

Schematic sketch

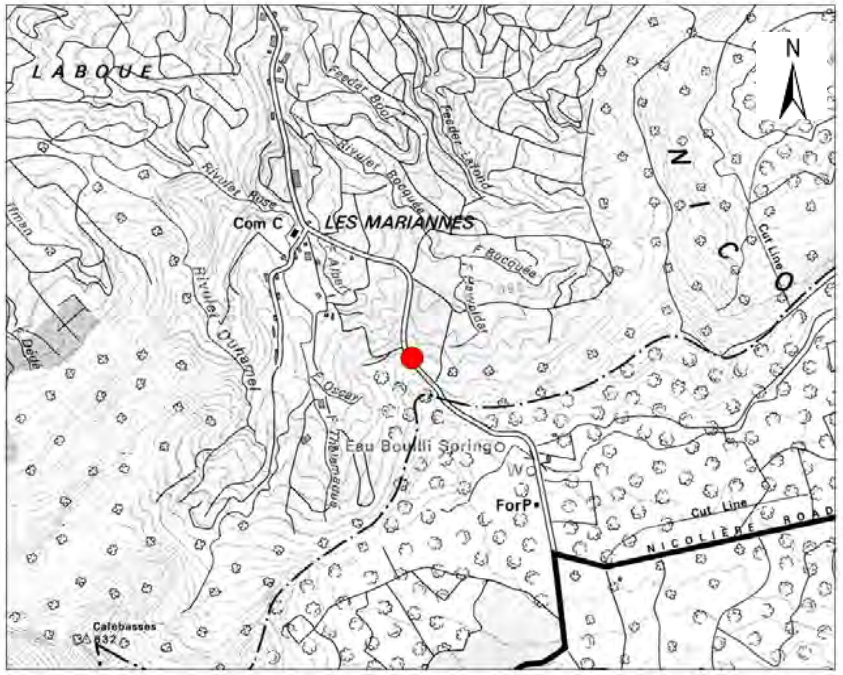
plan view



cross section



Location map （Scale: 1:25,000)



* **Description of "Type"**

River bank erosion

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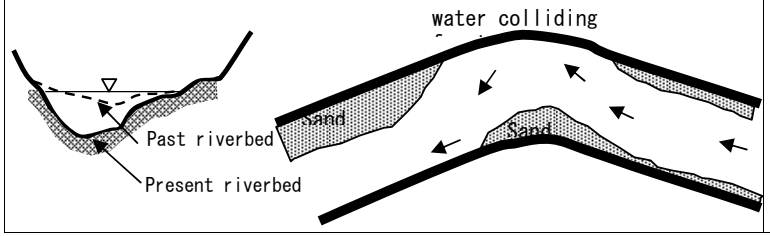

Damage of Embankment

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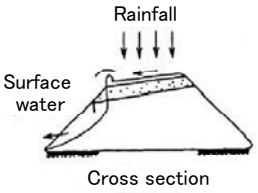
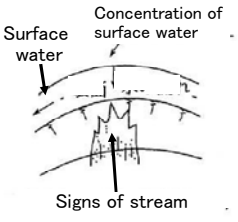




Mangement number	0	0	0	0	0	0	0	0	0	8

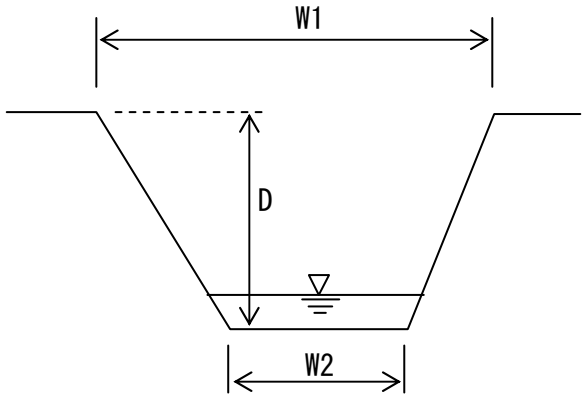
Evaluation sheet

Reporter's name:	*Youji /KASAHARA*

[check Point]

Category					Record
Stream	Structure	Figure / size	W1 : Width of the river		m
			W2 : Width of the riverbed		m
			D : Depth of the river		m
			Type	Right bank	Soil or Natural ground / Artificial structure
				Left bank	Soil or Natural ground / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

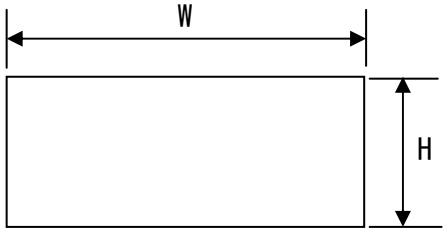
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	✓
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



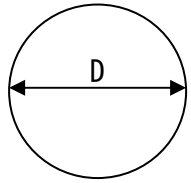
Structure of a river

[Description]

The cracks have been spotted on the road surface due to the deterioration of bearing capacity of the roadbed.The cracks have been repaired although the soil compaction on the roadbed and the strength confirmation of the road body will be necessary.



Box culvert

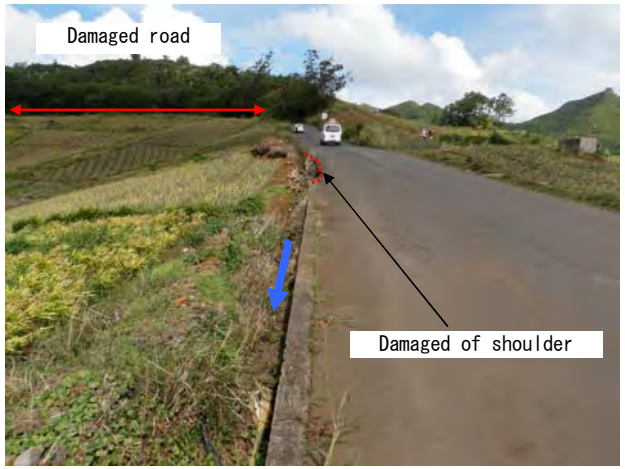


Pipe culvert

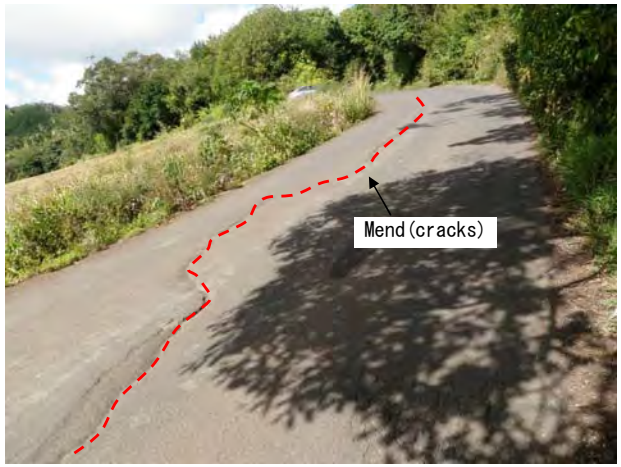
Management Number	0	0	0	0	0	0	0	0	0	8

Photo sheet

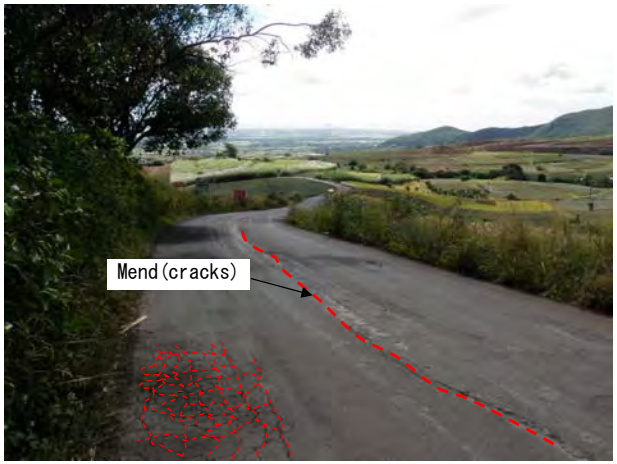
Date	*June 29, 2012*



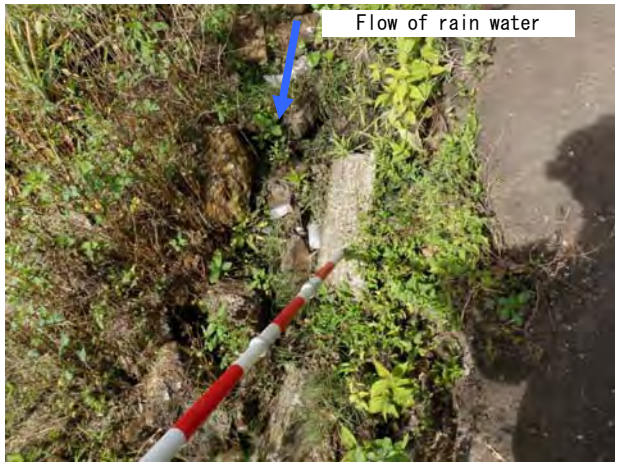
Ph-1 Full view of of damaged road



Ph-2 Repair mark on road



Ph-3 Repair mark on road



Ph-4 Damage of shoulder

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 0 8	Reporter's name:	Youji /KASAHARA	Date of report :	June 29, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

None	None
None	[Description] This phenomenon is the lack of the bearing capacity and is not a landslide.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshol		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

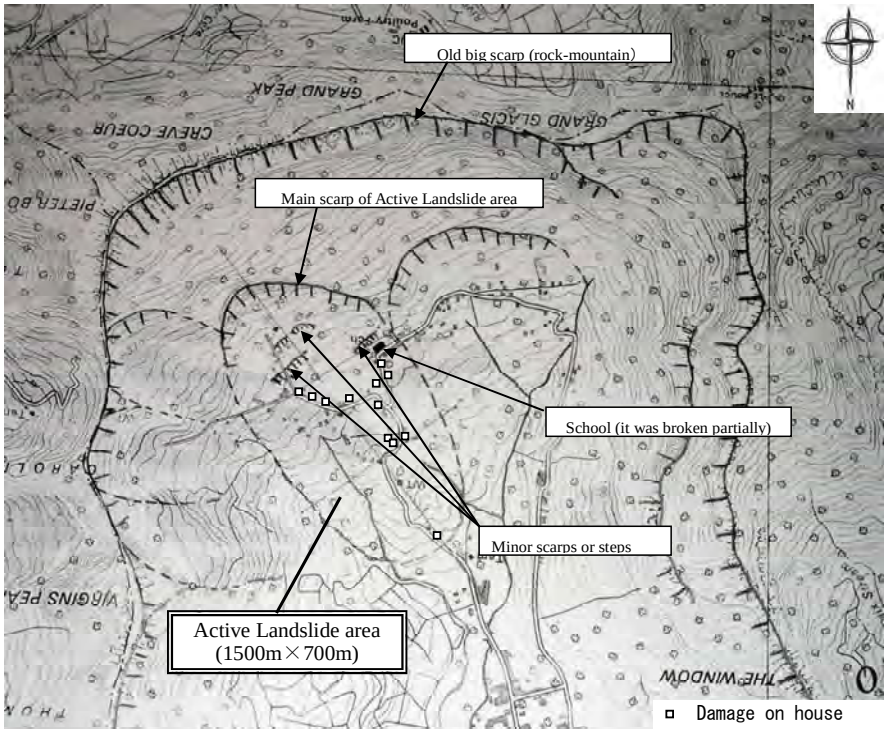
[The Photo of Monitoring Equipment]

	[Resident's awareness and relocation] [Land use restrictions in hazard areas] [Description]

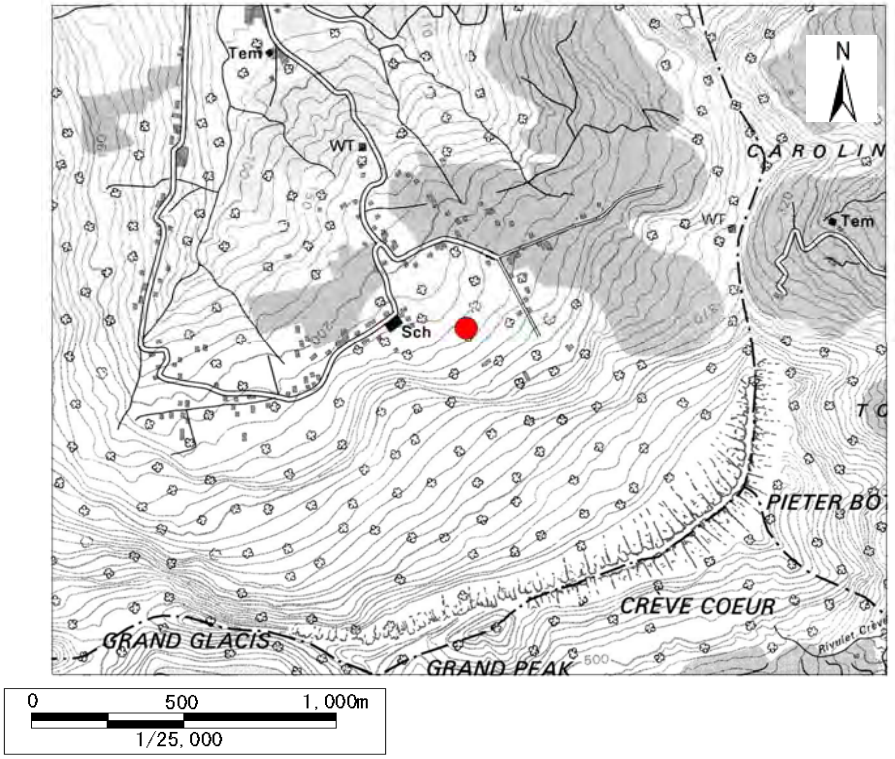
General Information Sheet (Slope)

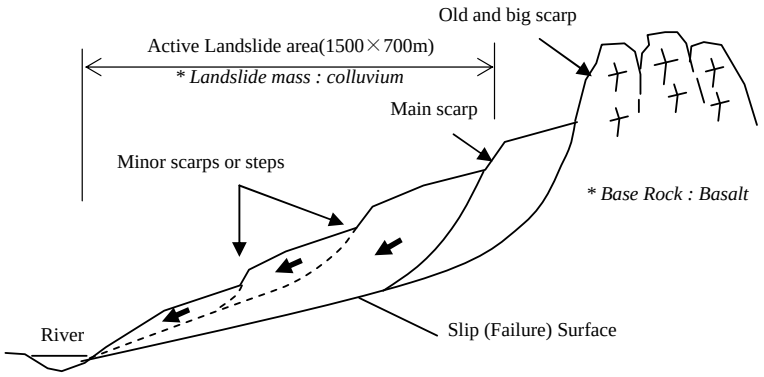
Management number	0 0 0 0 0 0 0 0 0 9		Reporter's name:	Tomoharu IWASAKI	Date of report :	June 6, 2012
Address	Chitrakoot, Vallee des Pretres	Type*	Landslide	latitude	-20.18496	longitude	57.544498

Schematic sketch



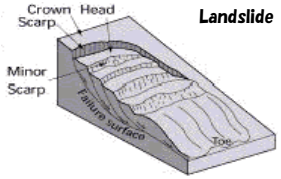
Location map （Scale: 1:25,000)





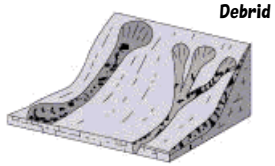
Landslide

A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).



Debris flow

A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.



Mangement number	0	0	0	0	0	0	0	0	0	9

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

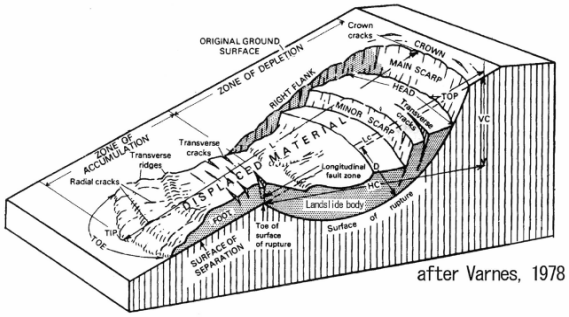
[check Point]

Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Eembankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(number : over 10 houses)	✓
		Slight	(number :)	
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number: 3)	✓
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious (Document, 2007)		✓
		slight		
		none		
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

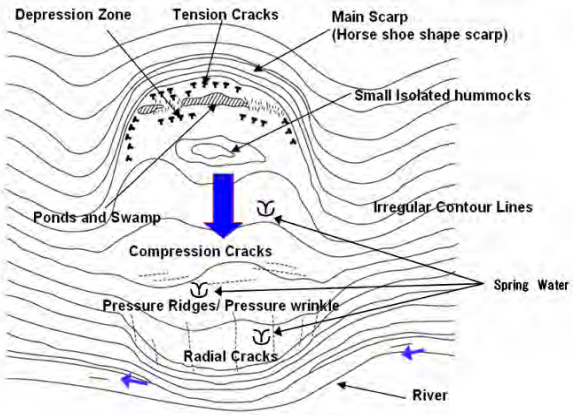
[Description]

A clear landslide was confirmed in this site and the characteristics are as follows;
(1)Main Scarp (Horse shoe Scarp),
(2) Some Minor Scarps,
(3) Steps ond Tension Cracks.
A clear landslide was confirmed. A landslide was reported to have damaged houses and a school after heavy rain in 2005. Boring investigation and monitoring have been carried out, but not sufficiently. No countermeasures have been implemented. Therefore, a detailed investigation and monitoring are necessary while the countermeasures are expected in future. L=1500m ,W=700m

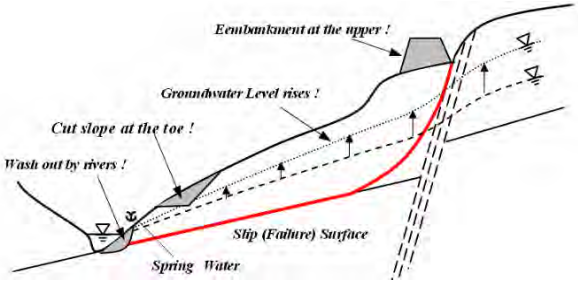
Existing record of Landslide(documents) : GEOTECHNICAL INVESTIGATION AT CHITRAKOOT VALLEE DES PRETRES, FOR MINISTRY OF ENVIRONMENT & NATIONAL DEVELOPMENT UNIT, 2007



Structure of a landslide



Schematic diagram of landslide landforms

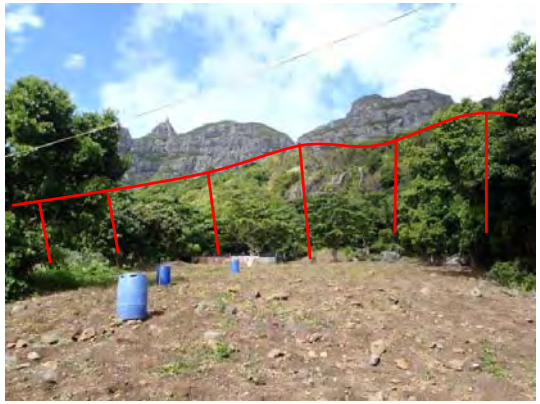


Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	0	9

Photo sheet

Date	*June 6, 2012*



Ph-1 Main scarp

Ph-2 Minor Scarp

Ph-3 Minor Scarp

Ph-4 Damage on school
(By the damage of the landslide, a part of the school cannot use)

Ph-5 Damage on house
(It's relocated)

Ph-6 Damage on house
(It's relocated)

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	0	9

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 6, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures	The kinds of landslide countermeasure	Number
	None	

[The Photo of Countermeasure]

None

None

None

[Description]

The Structural Measure (Hard-Component) was carried out.
The landslide is not stable. Therefore, a detailed investigation and monitoring are necessary while the countermeasures are expected in future.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Landslide Monitoring / Spec	Number
	Extesometer	3

Warning Threshol		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]
Some houses relocated.
By the damage of the landslide, a part of the school cannot use.

[Land use restrictions in hazard areas]
The land use of the hazard area is regulated, because of the landslide in 2005.

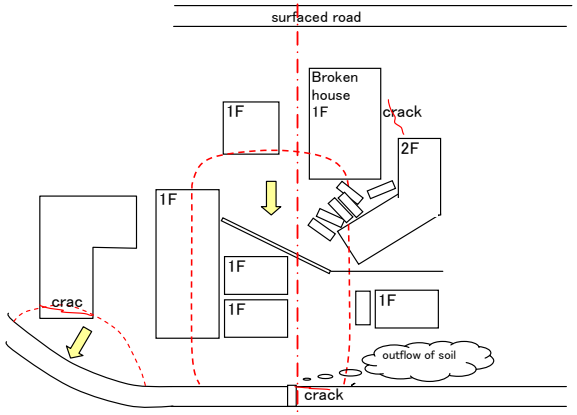
[Description]
Three extesometer were confirmed, and as for two expansion and contraction meters, a measurement is carried out by a local construction company.

General Information Sheet (Slope)

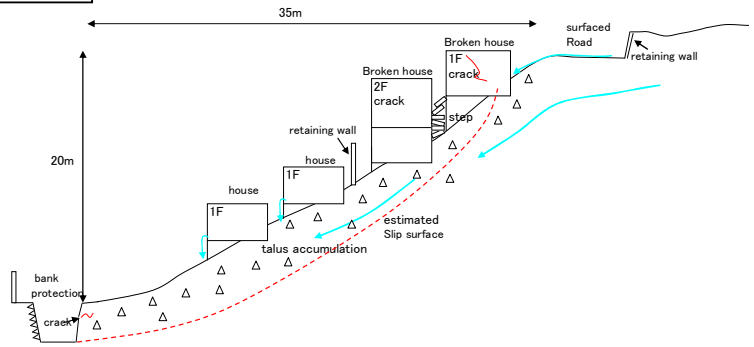
Management number	0 0 0 0 0 0 0 0 1 0	Reporter's name :	YoujiKASAHARA	Date of report :	June 22, 2012
Address	Vallee Pitot (near Eidgah)	Type*	Landslide	latitude	-20.18496	longitude	57.544498

Schematic sketch

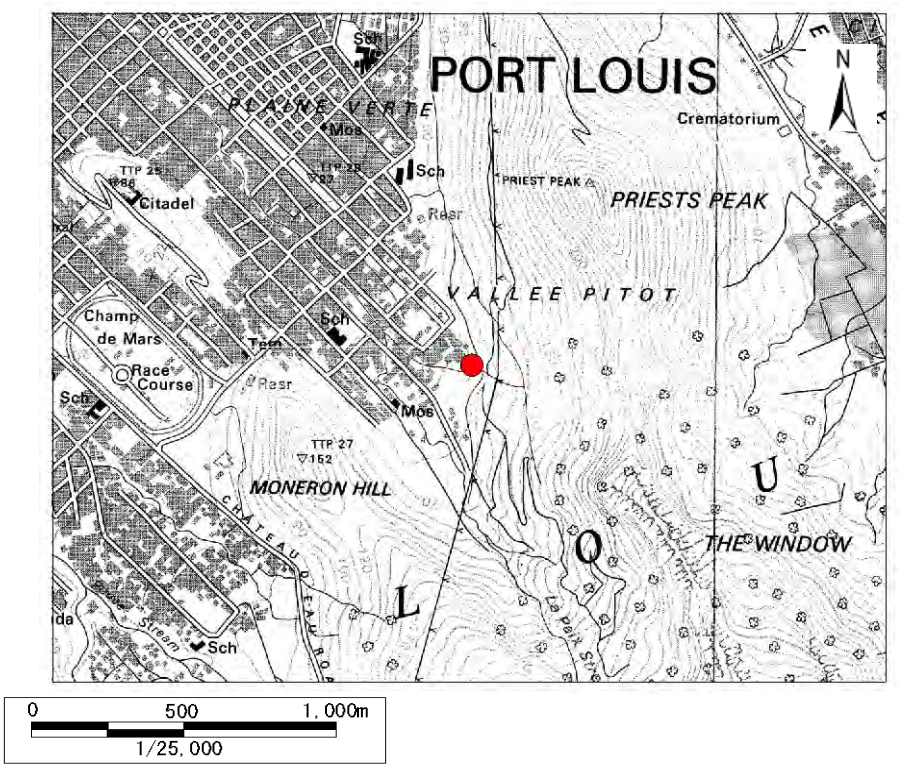
Plan view



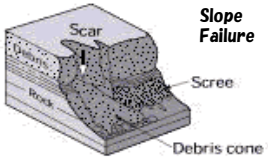
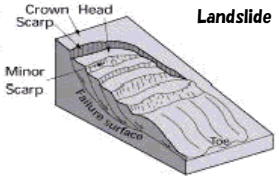
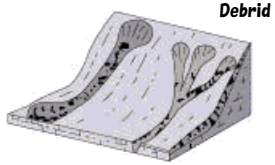
Cross section



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	1	0

Evaluation sheet

Reporter's name :	*YoujiKASAHARA*

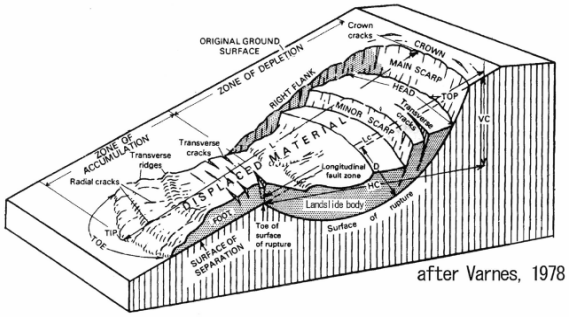
[check Point]

Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(number : 3 houses)	✓
		Slight	(number :)	
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious	(Newspaper)	✓
		slight		
		none		
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

[Description]

Lately, housing developments are growing rapidly in this area. A landslide boundary of 35m x 20m was clearly detected. Several houses have been damaged and some cracks were observed. The situation of the damage was also reported in the newspaper.The type of landslide is debris-slide caused by house construction in the upper slope and cut-slope at the toe. In addition, the incompleteness of the surface drainage is a problem.
The landslide is not stable. A landslide investigation and monitoring are necessary while the countermeasures are expected in future.

L=35m ,W=20m



Structure of a landslide

Le Matinal, jeudi 8 mars 2007

Une maison dangereuse pour ses occupants

Abhi Ramsahaye
Port-Louis, 7 mars

La maison de Saynaaz Meerun est inhabitable. C'est un réel danger pour les six occupants. Les fêlures et craquelures en témoignent. La plus grosse craquelure traverse sa cuisine et la chambre où elle et sa petite fille dorment. La Police de l'Environnement a été mandée sur les lieux mercredi matin pour voir la situation.

"Les policiers ont examiné la maison et ont pris des photos. Ils m'ont conseillée d'évacuer la maison le plus rapidement possible," a confié Saynaaz dans une déclaration au Matinal.

L'installation électrique constitue un gros danger pour eux. "Les premières fêlures ont apparu le samedi 24 février pendant les grosses pluies du cyclone Gamede. Les fêlures et les craquelures augmentent dramatiquement de jour en jour. Parfois, on entend les bruits effrayants des craquelures dans la maison. Nous sommes horrifiés par ces bruits. Surtout la nuit. Nous ressentons ces bruits comme un tremblement de terre," dit Saynaaz. Les six occupants de la maison sont : Saynaaz, sa fille de 11 ans, son frère, sa belle-sœur et ses deux neveux. Saynaaz travaille comme couturière à son propre compte pour se nourrir et envoyer sa fille à l'école. "In pren moi 15 ans travaille pou capav arange sa la case la. Ti pas facile pou moi gagn cash pou range enn lot la case. C'est avec bocou difficulté mone arrange sa la case la. Nou la vie en danger ici", se lamente la mère.

Tout récemment, elle a investi une importante somme d'argent pour compléter les travaux de construction. "Je lance un appel au gouvernement pour qu'il m'aider à sortir de cette situation", dit Saynaaz.

Plusieurs maisons du voisinage portent des fêlures et des craquelures.

Plusieurs parties de la maison, comme cet escalier, sont lézardées.

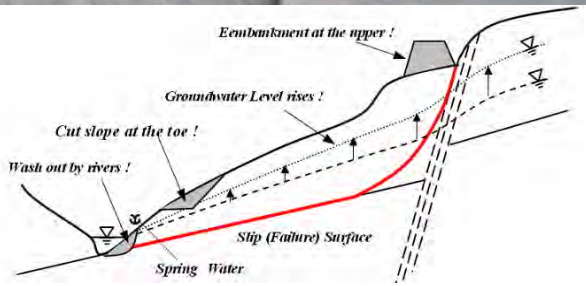
Croissance de 0,7 % de la population en 2006

Mahesh Bugnath
Port-Louis, 7 mars

La population de Maurice a augmenté de 0,7 % en 2006 pour atteindre 1 256 739 âmes au 31 décembre 2006, composé de 635 429 femmes et 621 310 hommes. C'est ce qui ressort du rapport 'Population and Vital Statistics 2006', publié par le Bureau central des statistiques (BCS).

La population féminine était supérieure de 14 000 par rapport à la gent masculine. Les personnes âgées de 0-14 ans représentaient 23,9 % de la population alors que celles de la tranche d'âge de 15 à 64 ans s'élevaient à 69,5 %. Les personnes de plus de 65 ans représentaient 6,6 %. Les naissances ont accusé une hausse de 6,5 % par rapport à 2005 pour atteindre 17 605.

Le nombre de décès enregistrés en 2006 était de l'ordre de 9 151 indiquant ainsi une croissance de 5,8 % par rapport à l'année précédente. Le taux de mortalité infantile a augmenté de 2,4 % en 2006, passant de 248 en 2005 à 254. Le nombre de mort-nés est passé à 147 en 2006, soit une baisse de 20,5 % par rapport au 185 décès enregistrés en 2005. Le nombre de mariages est passé à 11 471 en 2006, soit une hausse de 1,8 %.



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	1	0

Photo sheet

Date	*June 22, 2012*

Ph-1 Main scarp

Ph-2 The broken steps

Ph-3 Observed cracks

Ph-4 Damage on house
(Caused by landslide)

Ph-5 Direction of landslide movement

Ph-6 Cracks at bank protection

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 1 0	Reporter's name:	YoujiKASAHARA	Date of report :	June 22, 2012

Structural Measures (Hard-Component)

Existing landslide countermeasures	The kinds of landslide countermeasure	Number
	None	

[The Photo of Countermeasure]

None	None
None	[Description] The landslide is not stable. A landslide investigation and monitoring are necessary while the countermeasures are expected in future.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Landslide Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

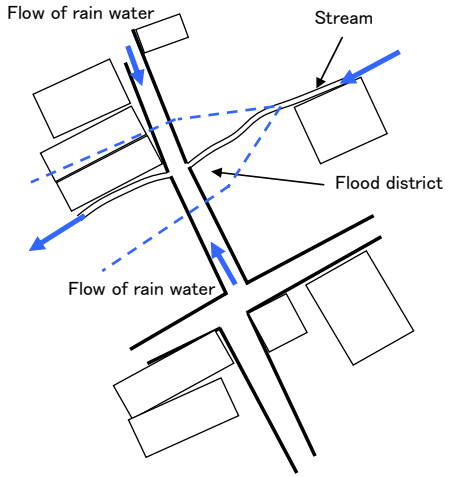
	[Resident's awareness and relocation] [Land use restrictions in hazard areas] [Description] The landslide is not stable. A landslide investigation and monitoring are necessary.

General Information Sheet (Other)

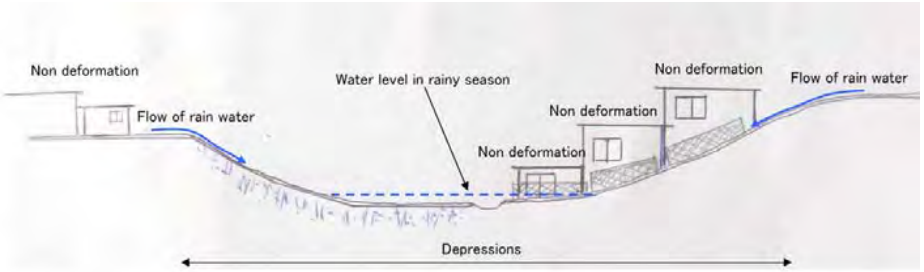
Management number	0 0 0 0 0 0 0 0 1 1	Reporter's name :	Youji KASAHARA	Date of report :	June 26, 2012
Address	LePouce Street	Type*	Stream erosion	latitude	-20.179253	longitude	57.512669

Schematic sketch

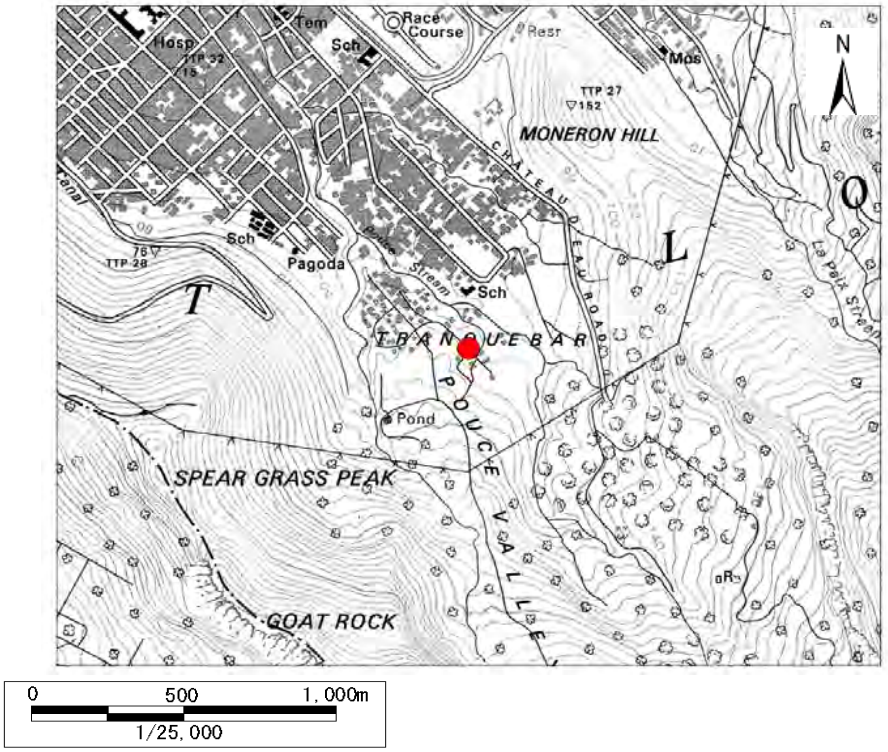
Plan view



Cross section



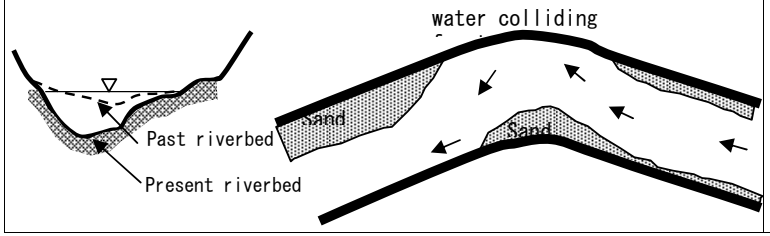
Location map （Scale: 1:25,000)



* **Description of "Type"**

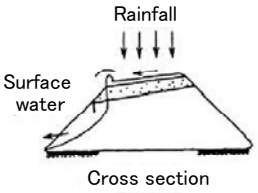
River bank erosion

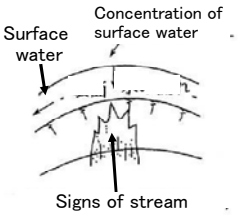
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	1	1

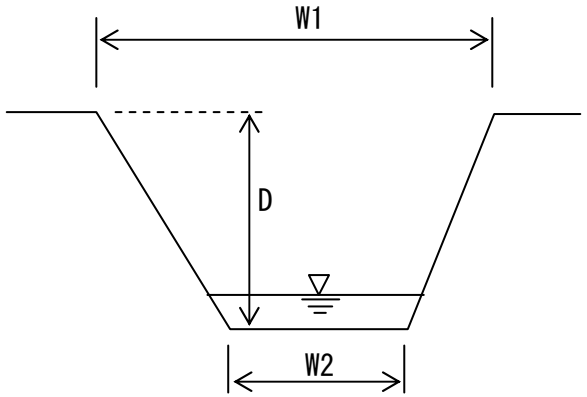
Evaluation sheet

Reporter's name:	*Youji KASAHARA*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	1.5 m
				W2 : Width of the riverbed	1.5 m
				D : Depth of the river	0.5 m
			Type	Right bank	(Soil or Natural ground) / Artificial structure
				Left bank	(Soil or Natural ground) / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				(Erosion)
					(Overflow stream)
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

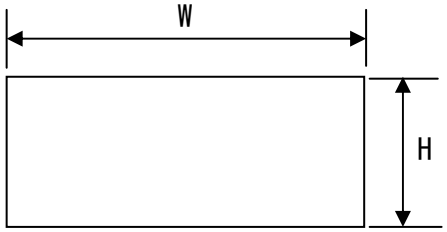
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



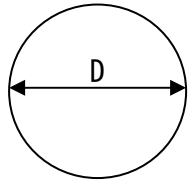
Structure of a river

[Description]

Insufficient surface drainage means rain water concentrates in low area and erodes roads and houses in its path. Damage is negligible at present, although the maintenance of the surface drainage will be necessary.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	1	1

Photo sheet

Date	*June 26, 2012*

Ph-1 Full view of the depressions

Ph-2 House around the depressions

Ph-3 Channel of the depressions (upstream)

Ph-4 Channel of the depressions

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	1

Reporter's name:	Youji KASAHARA	Date of report :	June 26, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

None

None

[Description]
Imperfection of the surface drainage causing the rain water to concentrate at the low area while erodes the road and houses in its path.There is a slight damage for now although the maintenance of the surface drainage will be necessary.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

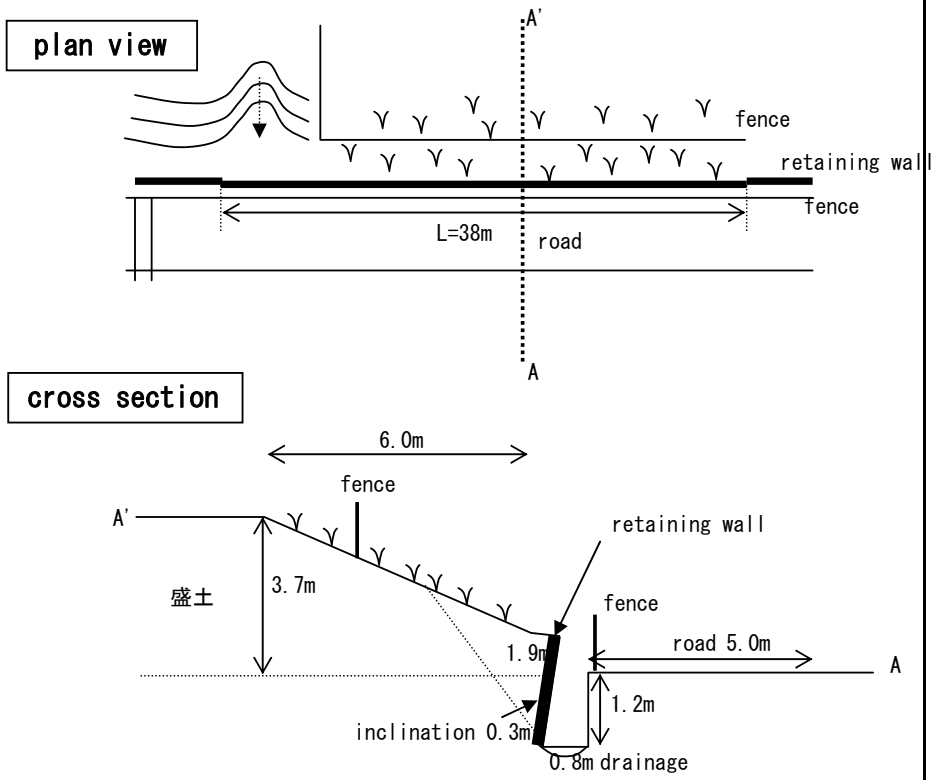
[Land use restrictions in hazard areas]

[Description]

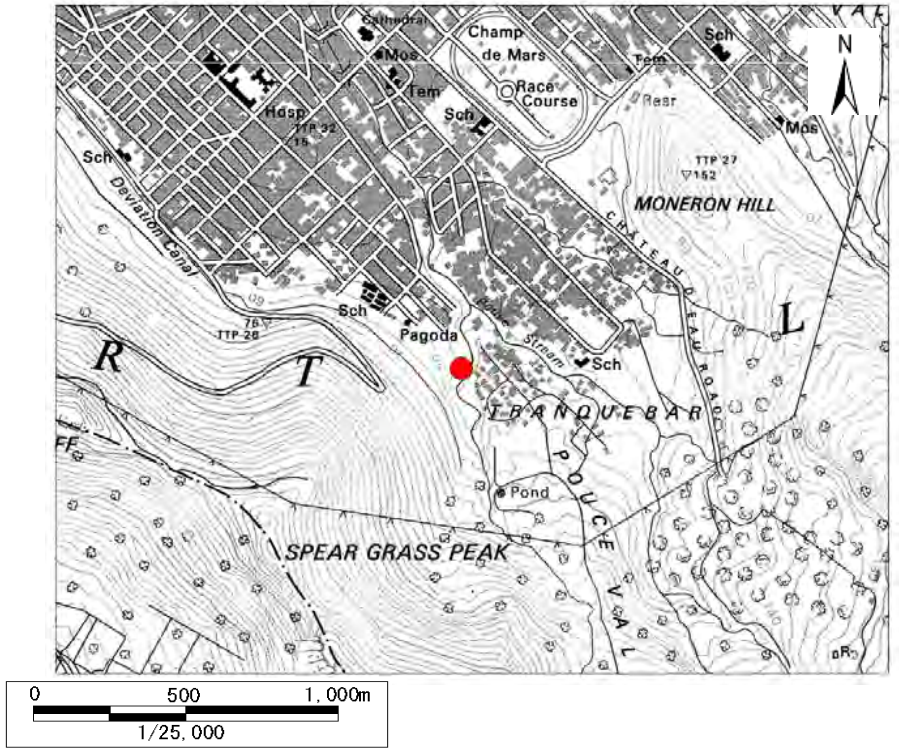
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 1 2		Reporter's name:	Ai Togami	Date of report :	June 15, 2012
Address	Justice Street (near Kalimata Mandir)	Type*	Damage of wall	latitude	-20.177	longitude 57.508222

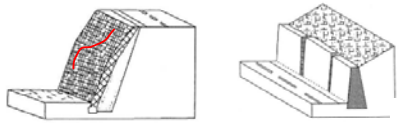
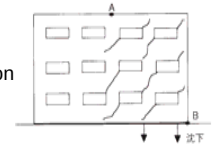
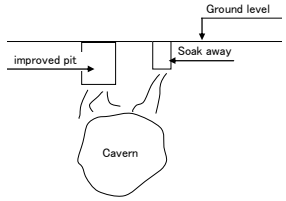
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other
		

Mangement number	0	0	0	0	0	0	0	0	1	2

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		Stone masonry / Other
	H : Height of the retaining wall	1.9 m
	L : Length of the retaining wall	38.0 m
	D : Thickness of the retaining wall	0.3 m
	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	m
	L : Length of the cavern	m
	D : Depth of the cavern	m
	Situation above the cavern	improved pit / soak away /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	

[Description]

An embankment has been constructed to build up the road, which caused an adjacent retaining wall to be pushed out and deformed. Insufficient surface drainage causing accumulation of groundwater could also be a factor causing this deformation.
It is necessary to reconsider the construction of the retaining wall and drainage.

Management Number	0	0	0	0	0	0	0	0	1	2

Photo sheet

Date	*June 15, 2012*

Ph-1 Full view of Embankments

Ph-2 Slope in the retaining wall upper part

Ph-3 Inclined the retaining wall

Ph-4 The Gully by flow of surface water

Ph-5 Flow of surface water

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	2

Reporter's name:	*Ai Togami*	Date of report :	*June 15, 2012*

Structural Measures (Hard-Component)

Existing countermeasures

The kinds of countermeasure	Number
retaining wall	1

[The Photo of Countermeasure]

[Description]
The Structural Measure (Hard-Component) was carried out.
The imperfection of the surface drainage is one of the factor that causing the accumulation of groundwater at the rear bank and pressurize the retaining wall.
It is necessary to reconsider the construction of the retaining wall and drainage.

Non-structural Measure (Soft-Component)

Monitoring Equipment

The kinds of Monitoring / Spec	Number

Warning Threshold	
Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

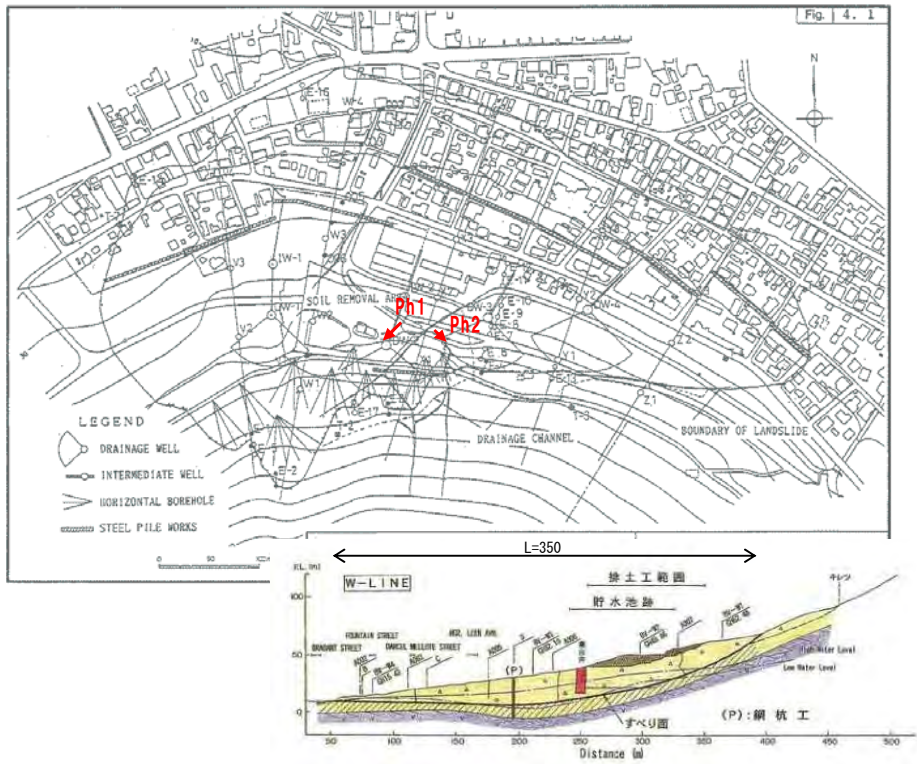
[Land use restrictions in hazard areas]

[Description]

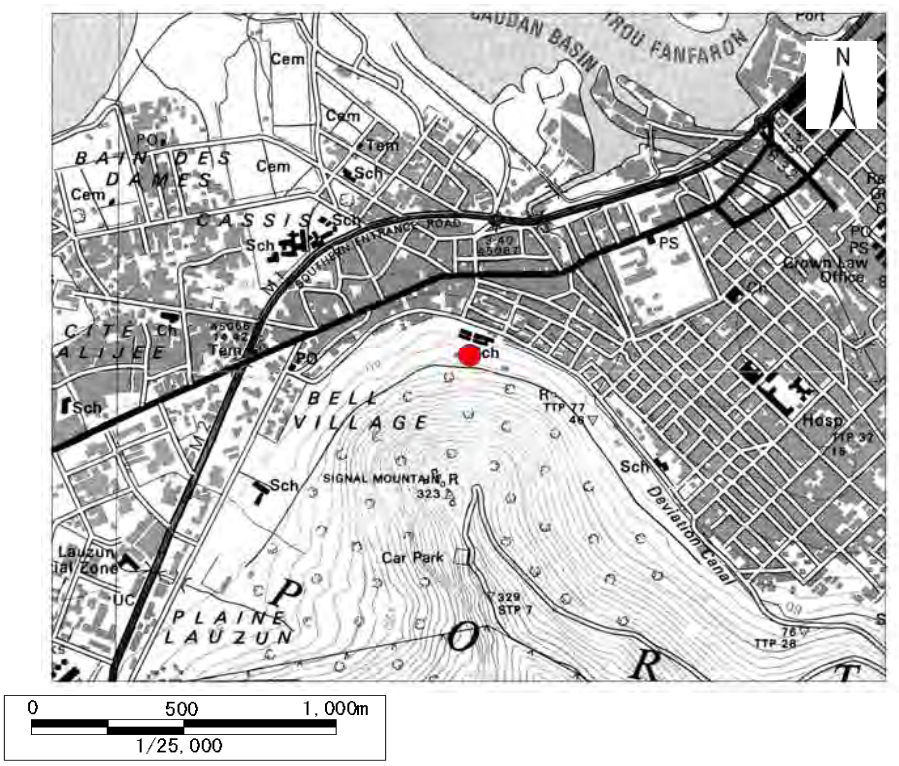
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 1 3	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 6, 2012
Address	Mgr. Leen Street and nearby vicinity, La Butte	Type*	Landslide	latitude	-20.167111	longitude	57.492569

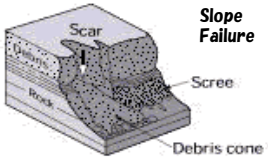
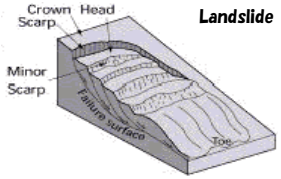
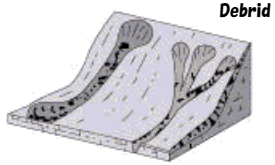
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	1	3

Evaluation sheet

Reporter's name :	*Tomoharu IWASAKI*

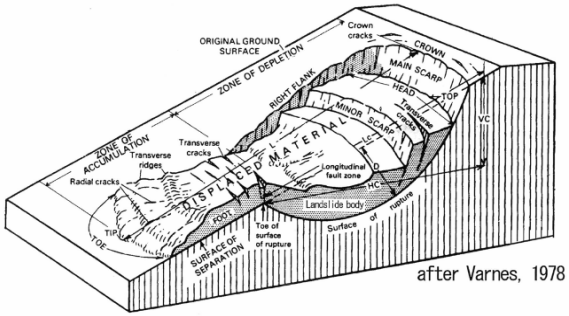
[check Point]

	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number : 1 , wall)	✓
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number: 3)	
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious		✓
		slight		
		none		
Countermeasure	There is no Countermeasure			
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		✓

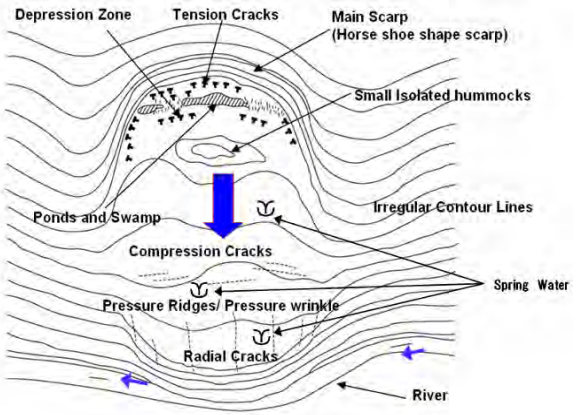
[Description]

The landslide of La Butte occurred in 1986, and many houses and a school were damaged. As for this landslide, countermeasures were carried out in 1998, therefore further investigation of the landslide is unnecessary. However, Port Louis City wants to continue the monitoring on this landslide in the future.

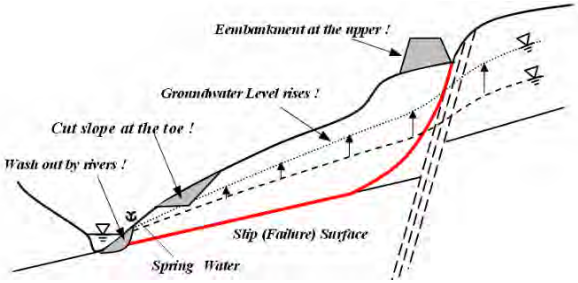
L=350m ,W=600m



Structure of a landslide



Schematic diagram of landslide landforms



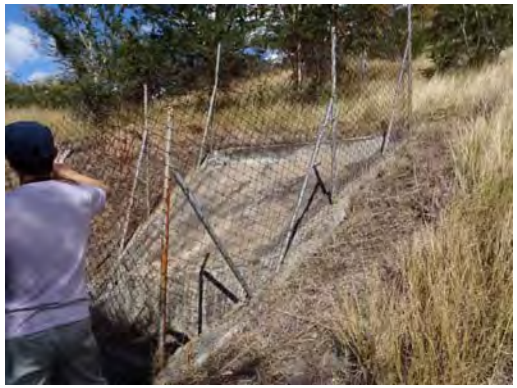
Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	1	3

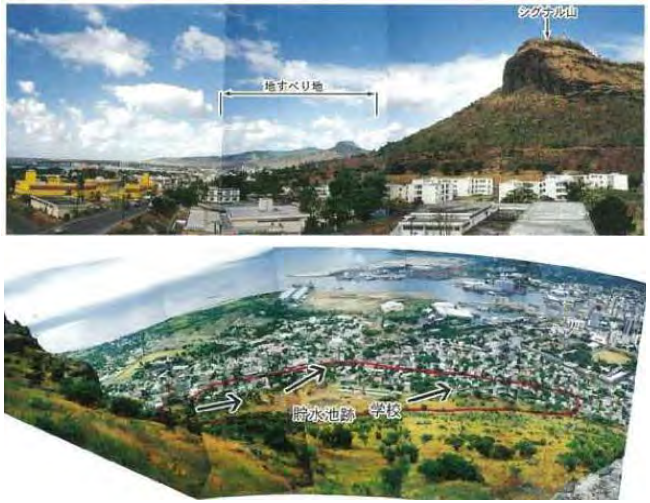
Photo sheet

Date	*June 6, 2012*

Ph-1 Drainage Well (W-2)



Ph-2 Horizontal drain work



Landslide countermeasure in Mauritius - La Butte landslide, Port Louis City : SABO, Vol64, pp3-9, Jan. 2000

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	3

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 6, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
Piles	6 Lines
Drainage well	4
Horizontal drain work	42

[The Photo of Countermeasure]

Drainage well

Horizontal drain Work

[Description]
The structural Measure (Hard-Component) was carried out in 1998.
Now, the landslide is stable.
It is not necessary to add the structural measures.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number
Extesometer	2
Water level meter	2
Inclinometers	3

Warning Threshold	
Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]
Non

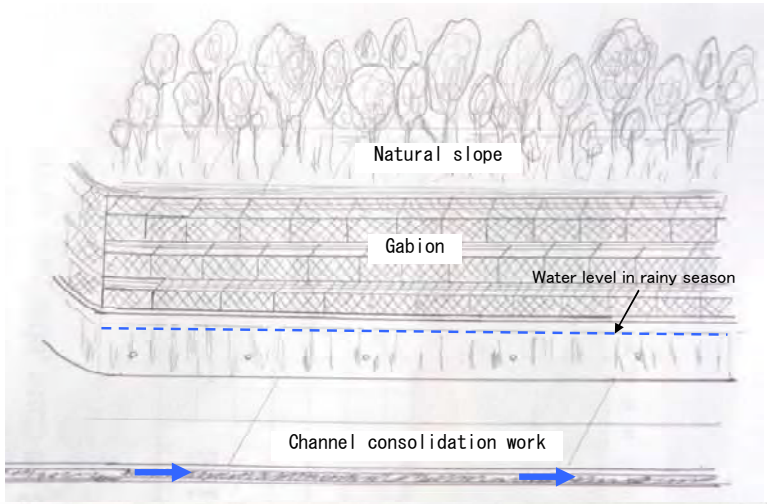
[Description]
As of 2006, as for 2 of 16 extesometer, 3 of 7 inclinometers, 2 of 10 groundwater level meters, a measurement was in a possible. However, it is not measured now.

General Information Sheet (Other)

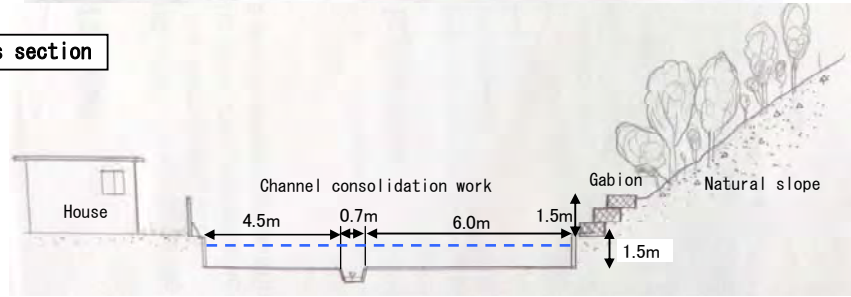
Management number	0 0 0 0 0 0 0 0 1 4	Reporter's name :	Youji KASAHARA	Date of report :	June 26, 2012

Address	Pouce Stream	Type*	Stream erosion	latitude	-20.176108	longitude	57.509739

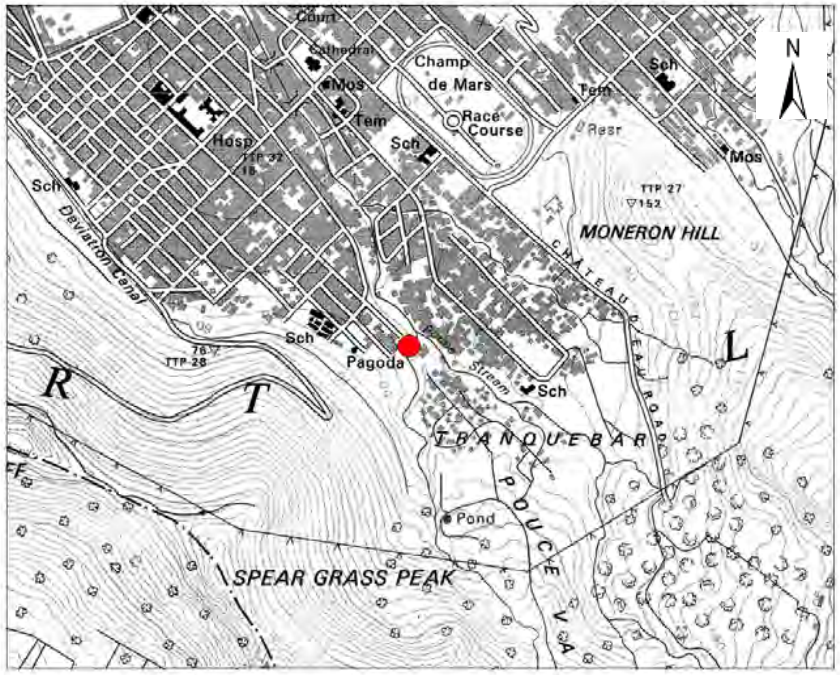
Schematic sketch



Cross section



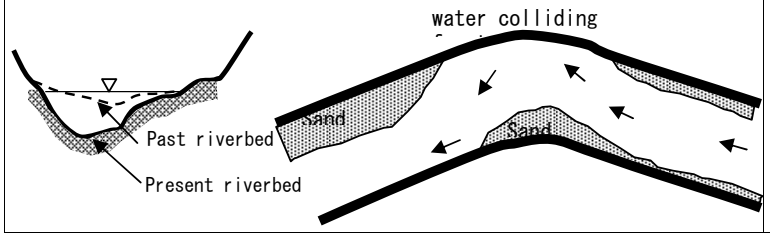
Location map （Scale: 1:25,000)



* **Description of "Type"**

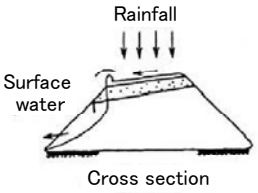
River bank erosion

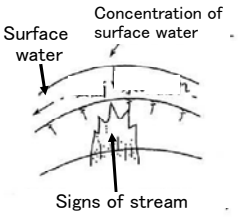
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	1	4

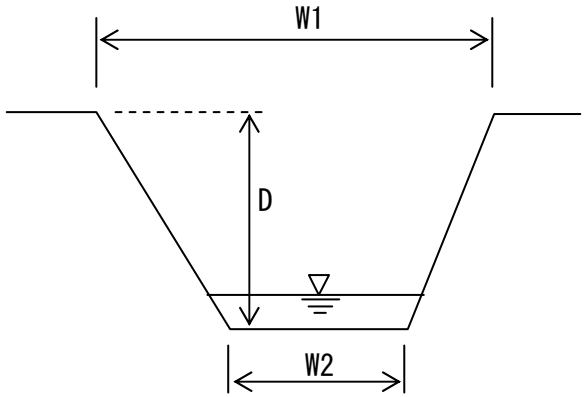
Evaluation sheet

Reporter's name:	*Youji KASAHARA*

[check Point]

Category					Record
Stream	Structure	Figure / size	W1 : Width of the river		11.2 m
			W2 : Width of the riverbed		11.2 m
			D : Depth of the river		1.5 m
			Type	Right bank	Soil or Natural ground / (Artificial structure)
				Left bank	Soil or Natural ground / (Artificial structure)
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				Erosion
					Overflow stream
					Other (none)
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

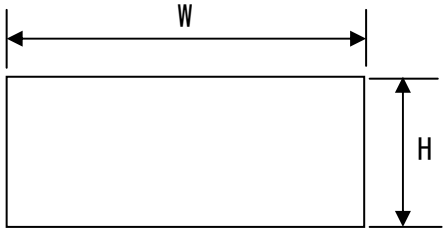
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	✓



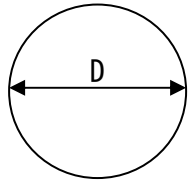
Structure of a river

[Description]

Every side of the channel is covered by concrete. The water level rises until the upper edge of the channel and erode beyond this point in the rainy season. The gabion has been set up at the lower part of slope at the channel and no damage has been reported yet. However, the deteriotion of the concrete wall is remarkable and the extention of the wall height will be necessary. Therefore, further investigation and countermeasures are advisable.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	1	4

Photo sheet

Date	*June 26, 2012*

Ph-1 Full view of the channel consolidation works

Ph-2 Stream of the channel consolidation works

Ph-3 Gabion set up in channel consolidation works left bank

Ph-4 There is no damage

Ph-5 End of the gabion

Ph-6 The channel works downstream

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	4

Reporter's name:	Youji KASAHARA	Date of report :	June 26, 2012

Structural Measures (Hard-Component)

Existing countermeasures

The kinds of countermeasure	Number
Gabion(H=1.5m,L=80m)	1

[The Photo of Countermeasure]

None

[Description]
The gabion has been set up at the lower part of natural slope at the channel to avoid an erosion.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

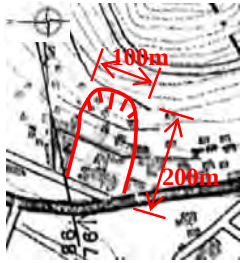
[Description]

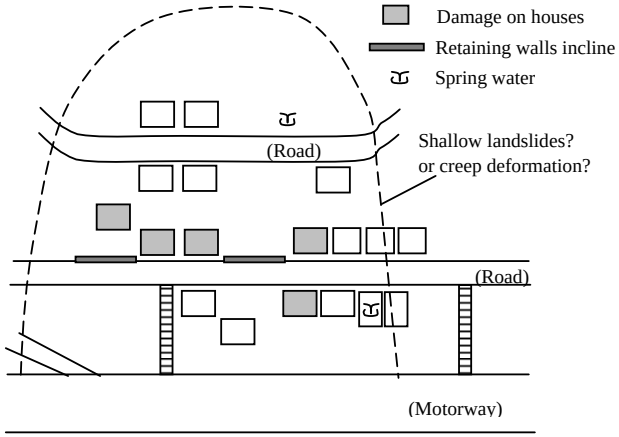
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 1 5	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 26, 2012
Address	Old Moka Road, Camp Chapelon	Type*	Landslide	latitude	-20.180186	longitude	57.481508

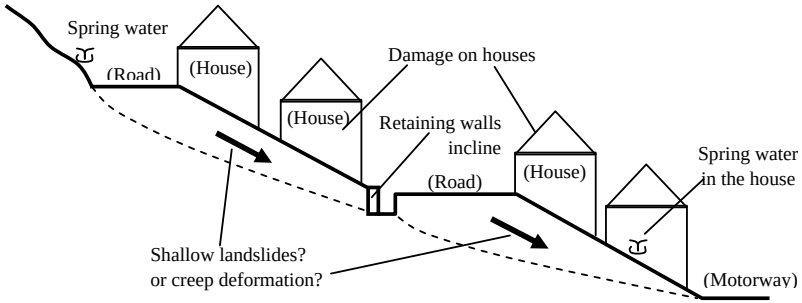
Schematic sketch

plan view

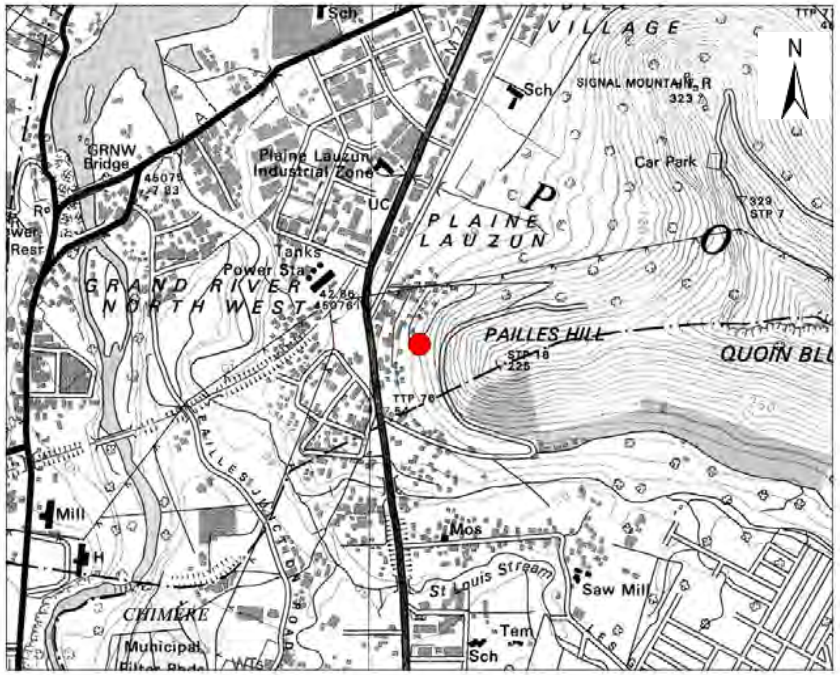




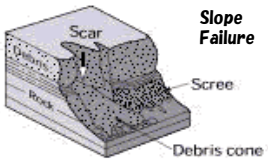
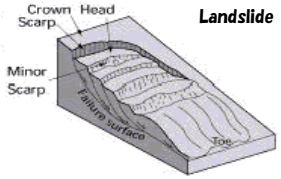
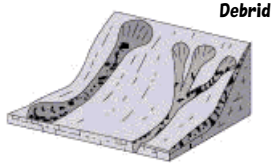
cross section



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	1	5

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

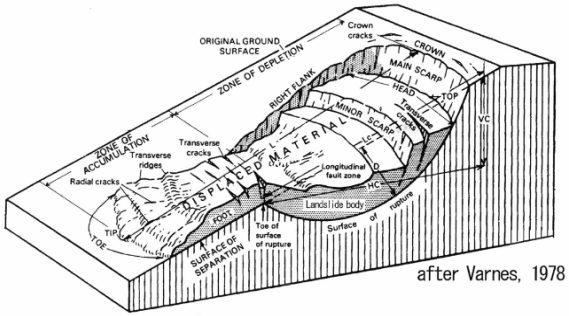
[check Point]

Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			✓
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number : 5 Houses, 2 Retaining walls)	✓
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number: 3)	✓
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

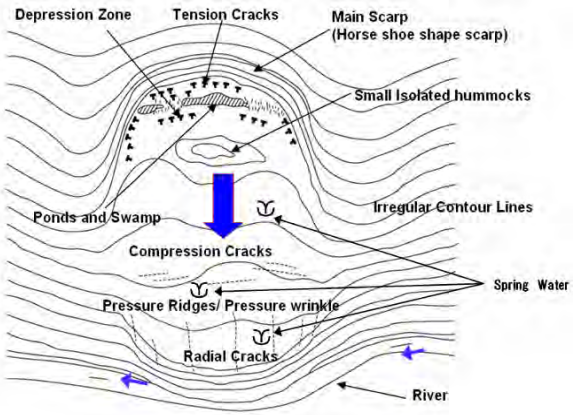
[Description]

The landslide topography is not clear, but five houses and two retaining walls were damaged while the spring water was spotted in two places. There are two possible causes of this, creep transformation of weak surface soil or a shallow landslide.
Therefore, landslide investigation and monitoring are necessary while the countermeasures are expected in future.

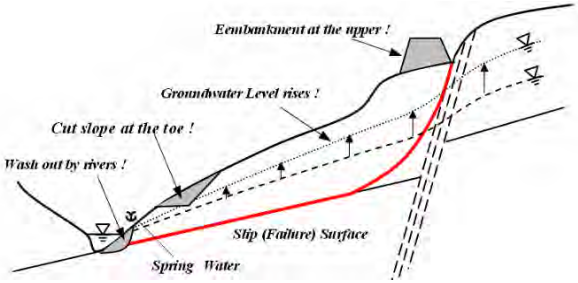
L=200m ,W=100m



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	1	5

Photo sheet

Date	*June 26, 2012*

Ph-1 Full view

Ph-2 Retaining walls incline

Ph-3 Damage on house

Ph-4 Damage on house

Upper part of the slope

Ph-5 Spring waters

Ph-6 Main scarp

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	5

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 26, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures	The kinds of landslide countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]
The landslide topography is not clear, but five houses and two retaining walls were damaged while the spring water was spotted in two places. There is two possiblity for this case which is to be the creep transformation of weak surface soil or the shallow landslides.
Therefore, landslide investigation and monitoring are necessary while the countermeasures are expected in future.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Landslide Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

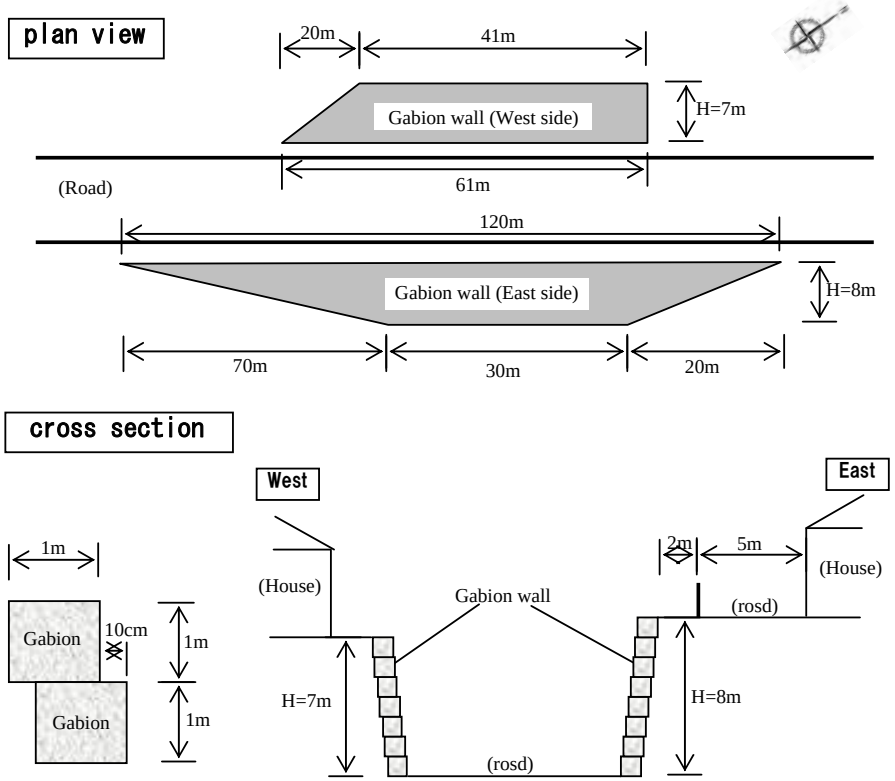
[Land use restrictions in hazard areas]

[Description]

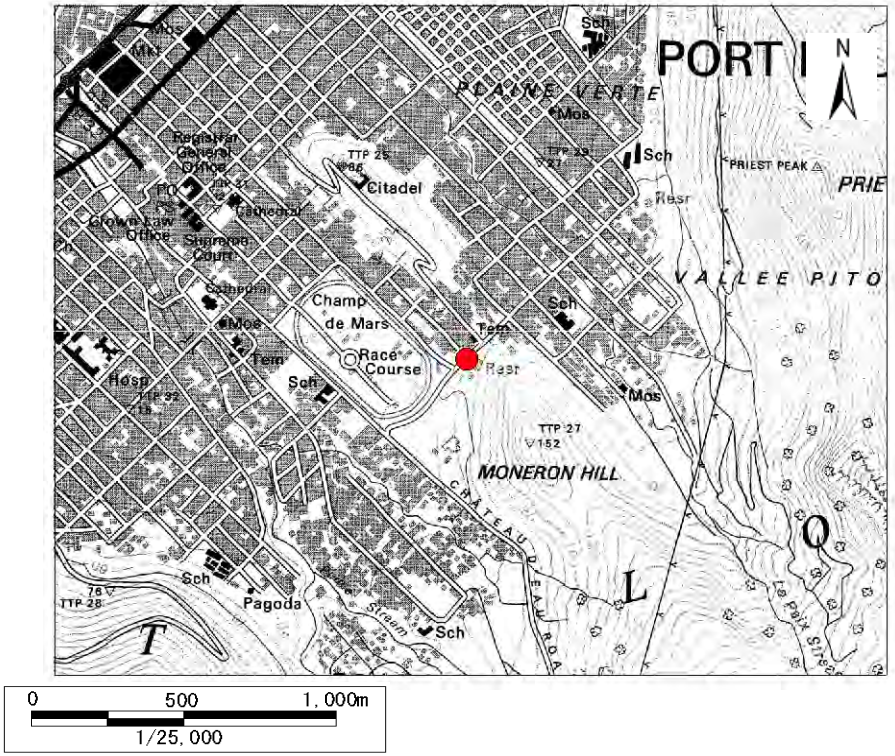
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 1 6	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 15, 2012
Address	Boulevard Victria, Montague Coupe	Type*	Damage of wall	latitude	-20.167972	longitude	57.514944

Schematic sketch

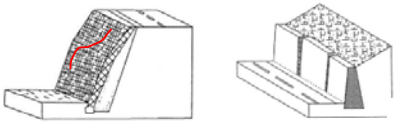


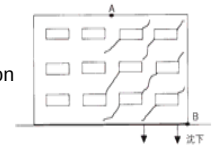
Location map （Scale: 1:25,000)

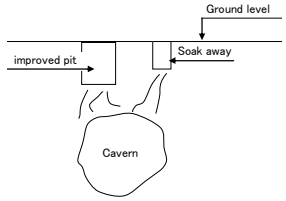


*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other







Mangement number	0	0	0	0	0	0	0	0	1	6

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		Stone masonry / (Other (Gabion))
	H : Height of the retaining wall	West 7 m, East 8 m
	L : Length of the retaining wall	West 61 m, East 120 m
	D : Thickness of the retaining wall	West - m, East - m
	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other (none)
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	m
	L : Length of the cavern	m
	D : Depth of the cavern	m
	Situation above the cavern	improved pit / soak away /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	✓

[Description]

The gabion was installed on the cut-slope when the road was constructed. The height of the each gabion is 1m with a total height on the east side of 8m, and 7m on the west side. There is no record of damage for this site but the angle of the wall is steep. Therefore, the observation of this wall is advisable.

Management Number	0	0	0	0	0	0	0	0	1	6

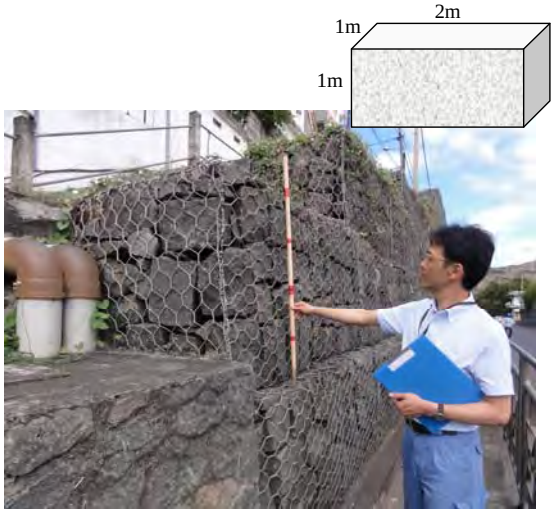
Photo sheet

Date	*June 15, 2012*

Ph-1 Full view of Gabion wall (East side)

Ph-2 Full view of Gabion wall (West side)

Ph-3 The upper part and the rear of the Gabion wall (East side)
There is not the abnormality



Ph-4 Dimensions of the Gabion （1m × 2m × 1m）

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 1 6	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 15, 2012*

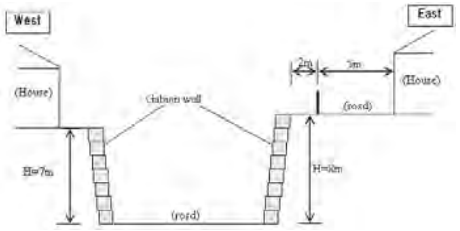
Structural Measures (Hard-Component)

Existing countermeasures

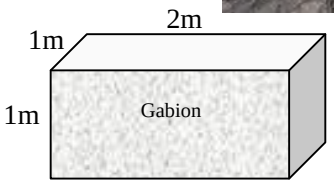
The kinds of countermeasure	Number
Gabion wall	1

[The Photo of Countermeasure]

Ph-1 Full view of Gabion wall



Ph-2 cross section



Ph-3 Dimensions of the Gabion (1m×2m×1m)

[Description]

The gabion was pilled on the cutted slope when the road was constructed.The height of the each gabion is 1m with a total height on the east side of 8m, and 7m on the west side and the angle of the gabion wall is 1/10.
There is no record of damage for this site but the angle of the wall is steep.Therefore, the observation of this wall is advisable.

Non-structural Measure (Soft-Component)

Monitoring Equipment

The kinds of Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

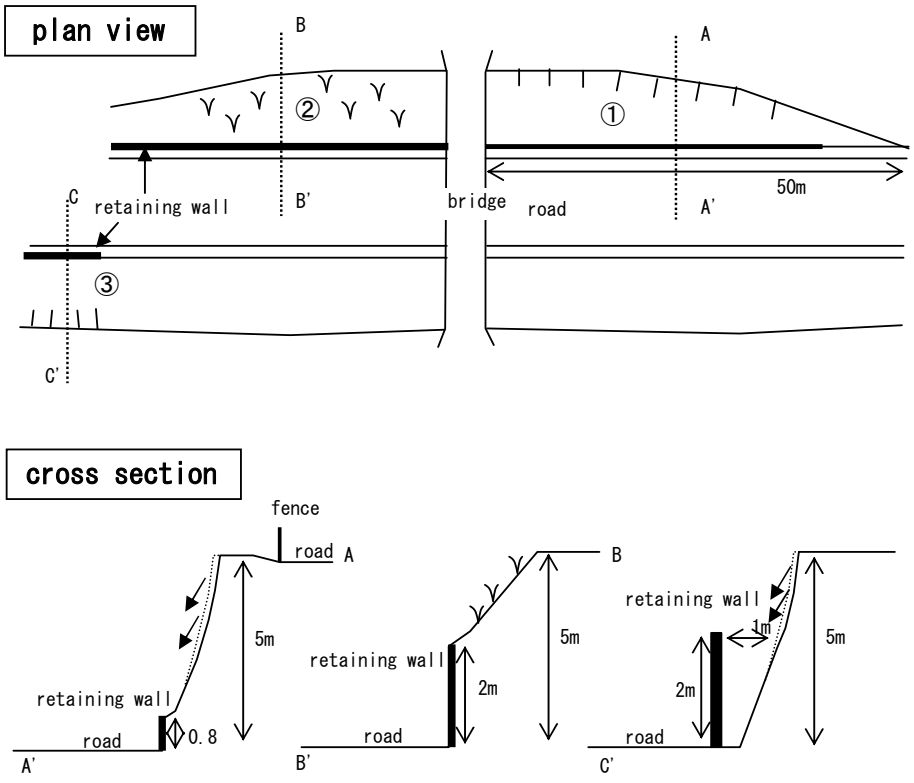
[Land use restrictions in hazard areas]

[Description]

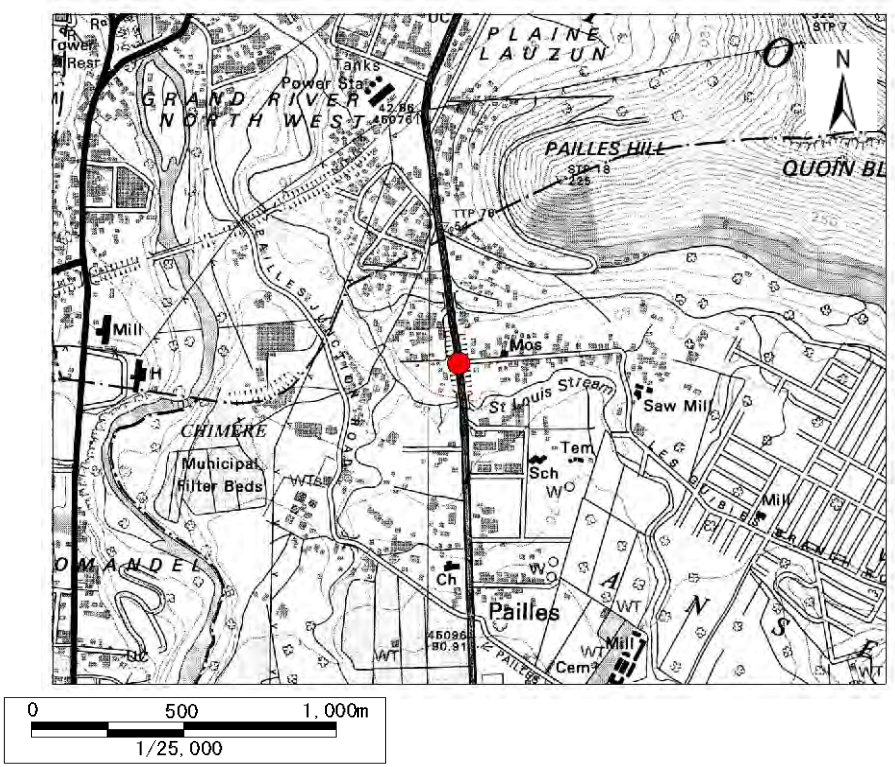
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 1 7		Reporter's name :	Ai Togami	Date of report :	June 22, 2012
Address	Pailles : (i) access road to Les Guibies and along motorway, near flyover bridge	Type*	Slope failure	latitude	-20.1855	longitude 57.48175

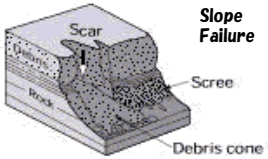
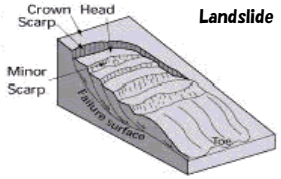
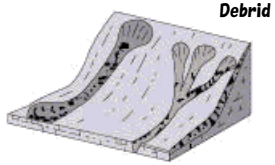
Schematic sketch



Location map （Scale: 1:25,000 ）



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	1	7

Evaluation sheet

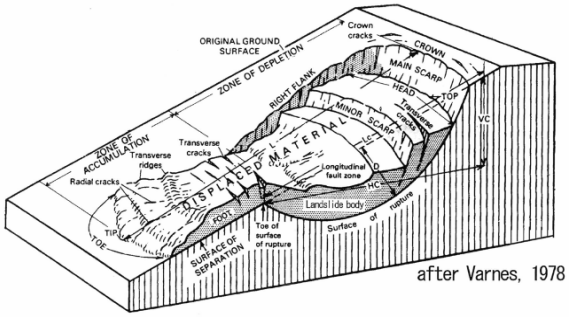
Reporter's name:	*Ai Togami*

[check Point]

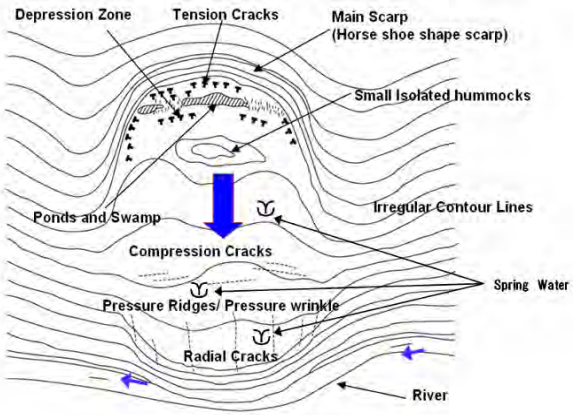
	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Embankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(name: , number:)	
		Slight	(name: crack of a wall , number: 1	✓
		None		
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

[Description]

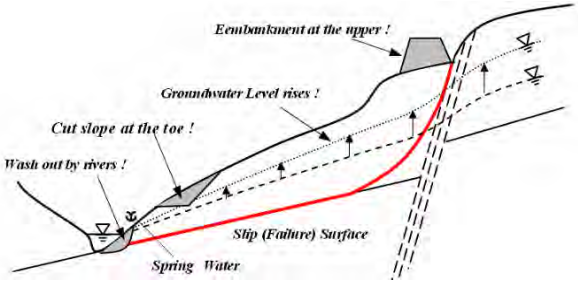
The slope failure has been spotted along the cut-slope (5m height) at the roadside of highway. The surface of the cut-slope has been weathered, and it is eroded by rain.
The slope(①～③) is characterized as follows;
①The shallow slope failure has been occurred, and this slope has loose stones. It will be necessary to reconsider the retaining wall.
②The shallow slope failure has been occurred.
③The shallow slope failure has been occurred in this slope. Because the retaining wall keep back a rock, it is safe.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	1	7

Photo sheet

Date	*June 22, 2012*

Ph-1 Full view of slope failure

Ph-2

Ph-3 upper of slope

Ph-4

Ph-5 clack

Ph-6 slope failure and retaining wall

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	7

Reporter's name:	*Ai Togami*	Date of report :	*June 22, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
retaining wall	3

[The Photo of Countermeasure]

[Description]
The slope failure has been spotted along the cuting(5m height) at the roadside of highway.Weather on the surface layer causing the erosion it rains.The slope(①～③) is characterized as follows;
①The slope has occured shallow slope failure and has loose stones. It will be necessary to reconsider the retaining wall.
②The slope is not slope failure and stability by the retaining wall.
③The slope has occured shallow slope failure. But, the reataining wall keep back rock fall.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

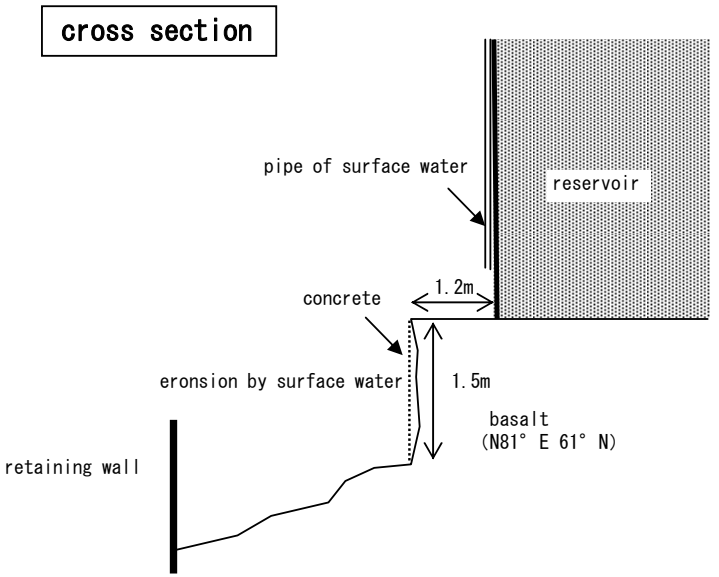
[Land use restrictions in hazard areas]

[Description]

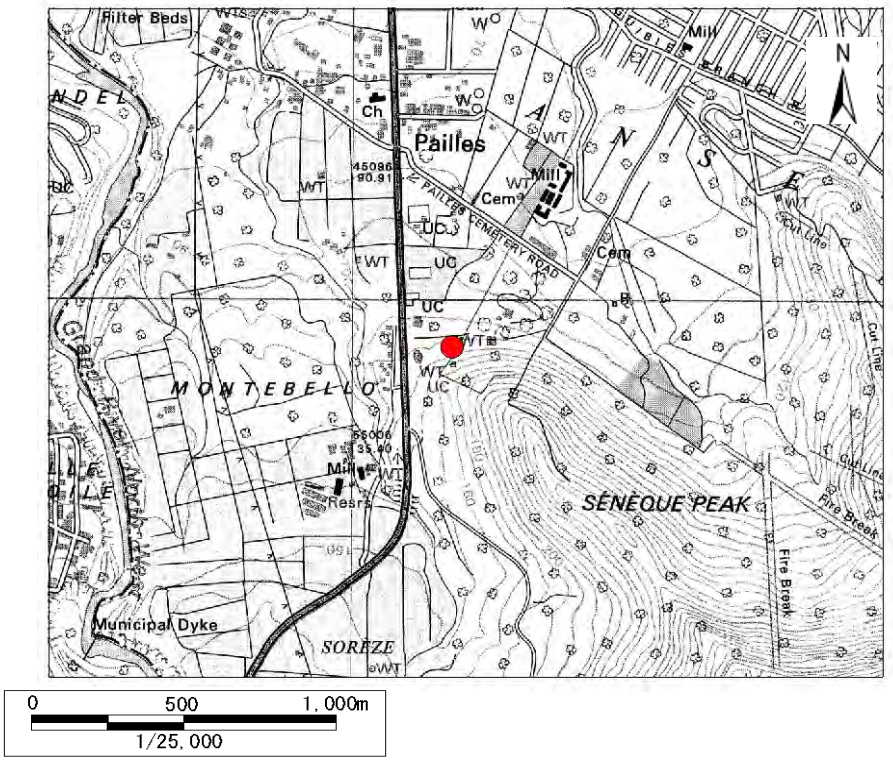
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 1 8		Reporter's name :	Ai Togami	Date of report :	June 22, 2012
Address	*Pailles : (ii) access road Morcellement des Aloes from Avenue M.Leal (on hillside)*	Type*	Stream erosion	latitude	*-20.2*	longitude	*57.483861*

Schematic sketch



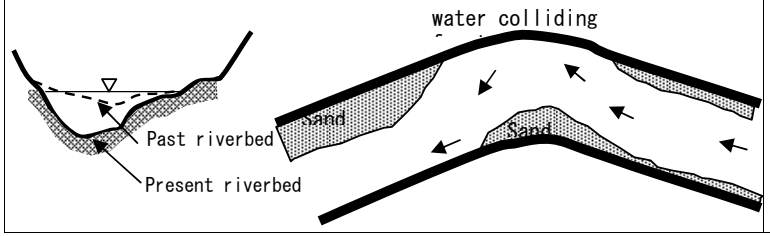
Location map （Scale: 1:25,000)



*** Description of "Type"**

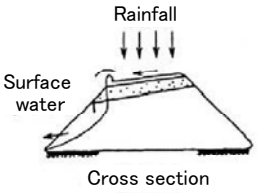
River bank erosion

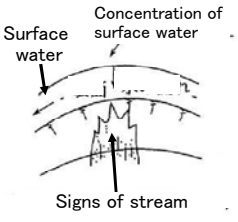
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	1	8

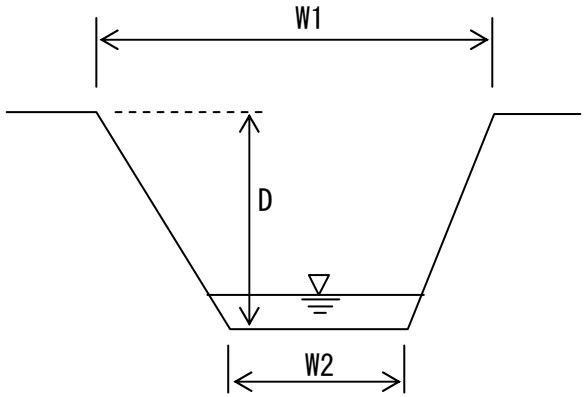
Evaluation sheet

Reporter's name:	*Ai Togami*

[check Point]

Category					Record
Stream		Figure / size	W1 : Width of the river		- m
			W2 : Width of the riverbed		- m
			D : Depth of the river		- m
		Type	Right bank		Soil or Natural ground / Artificial structure
			Left bank		Soil or Natural ground / Artificial structure
		Box culvert	W : Width		m
			H : Height		m
		Pipe culvert	D : Diameter		m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

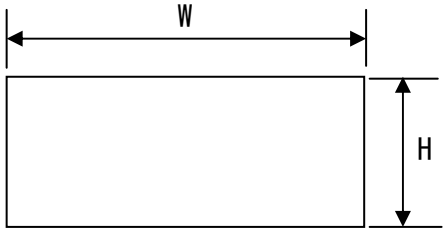
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



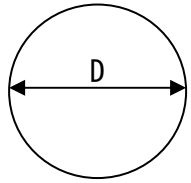
Structure of a river

[Description]

Insufficient drainage is causing erosion at the base of the water tank. Immediate remedial work is needed.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	1	8

Photo sheet

Date	*June 22, 2012*

Ph-1 Full view

Ph-2 erosion of the groundwork

Ph-3 flow of surface warter

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	1	8

Reporter's name:	*Ai Togami*	Date of report :	*June 22, 2012*

Structural Measures (Hard-Component)

Existing countermeasures

The kinds of countermeasure	Number
concrete	1

[The Photo of Countermeasure]

[Description]
Imperfection of the drainage causing the erosion at the base of water tank. The maintenace will be the necessary immediately.

Non-structural Measure (Soft-Component)

Monitoring Equipment

The kinds of Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

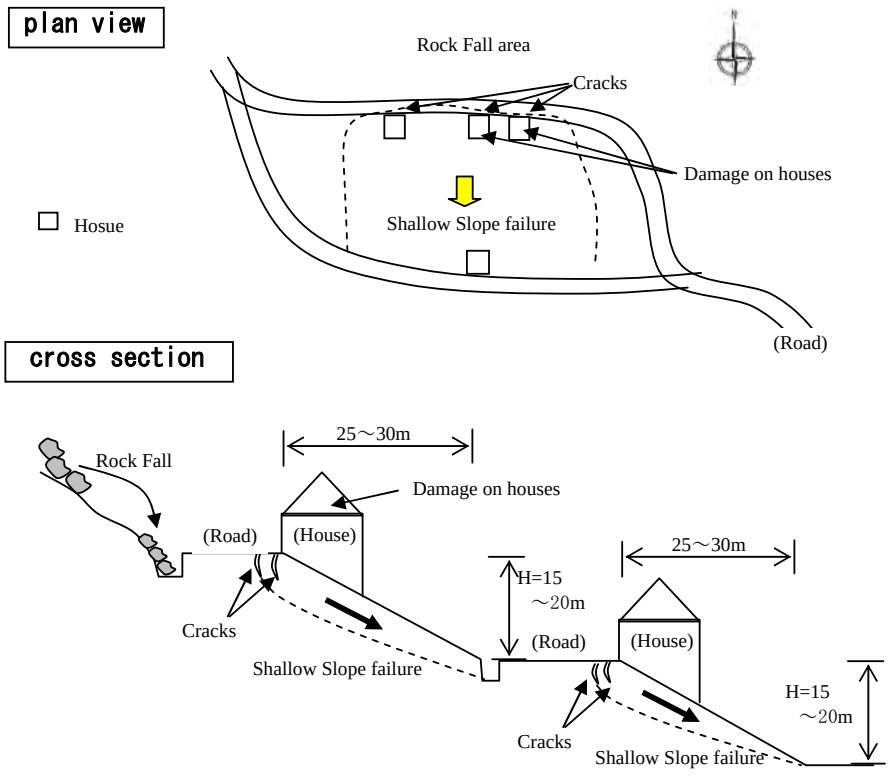
[Land use restrictions in hazard areas]

[Description]

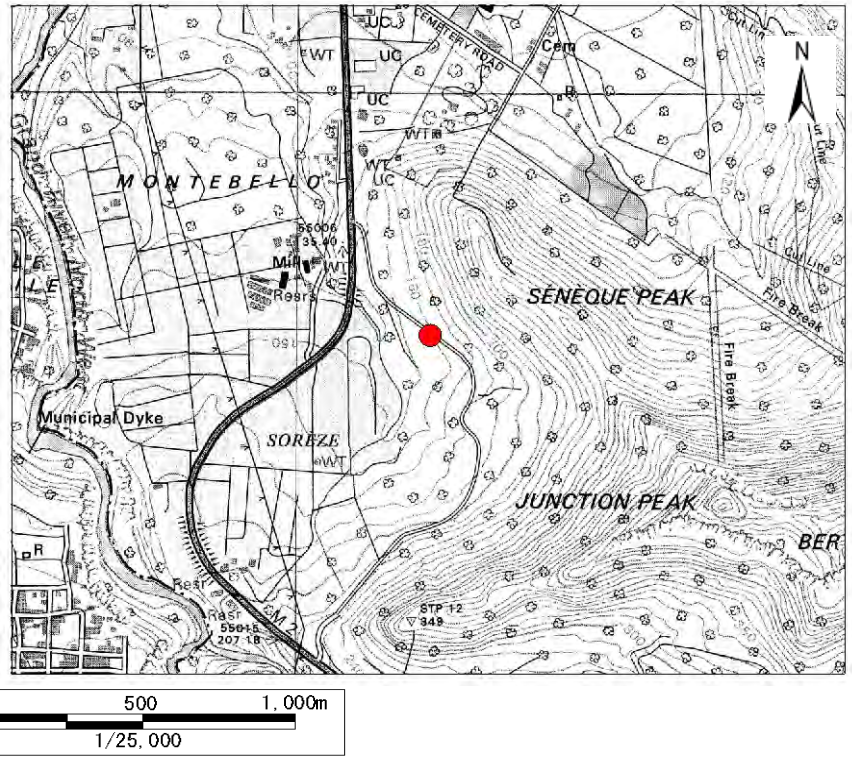
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 1 9	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 16, 2012
Address	*Pailles : (iii) soreze regin*	Type*	Slope failure	latitude	-20.205556	longitude	57.486583

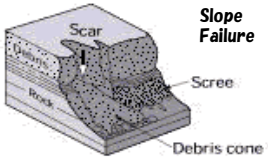
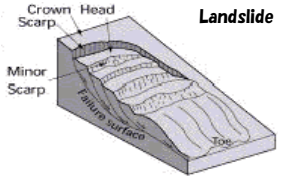
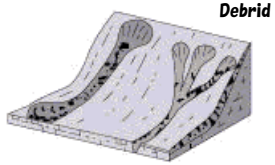
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	1	9

Evaluation sheet

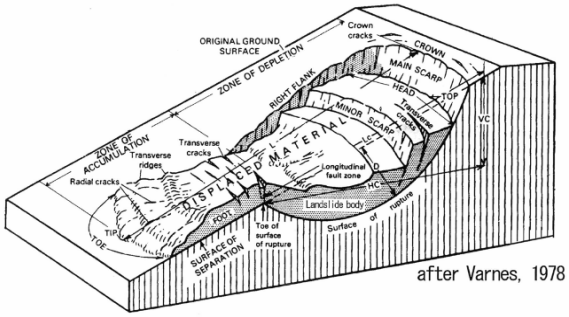
Reporter's name:	*Tomoharu IWASAKI*

[check Point]

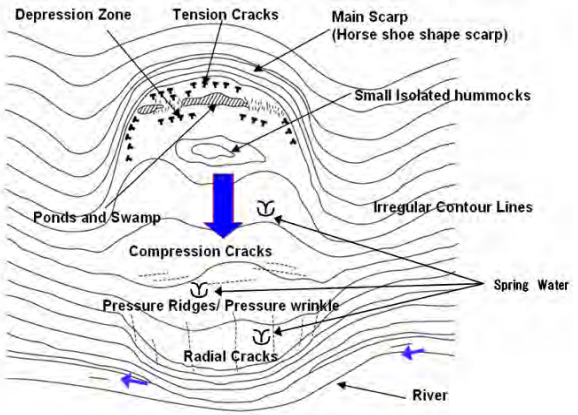
	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number : 2 houses)	✓
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

[Description]

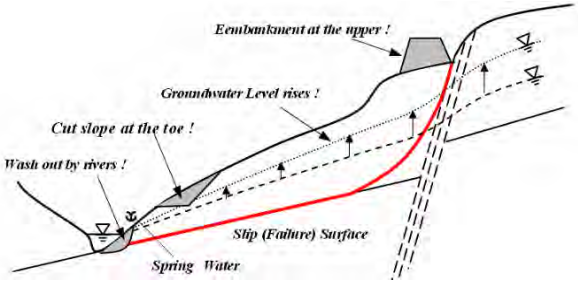
Falling rocks at the upper slope and shallow slope failure at the middle and lower slope occurred in an area of housing. There is only slight damage for now, although shallow slope failure and cracks have been confirmed.
The cause of shallow slope failure is supposed as follows;
(1) The inclination of the slope is relatively a steep angle
(2) The surface soil is weak colluvium which weathered
(3) Cut earthwork with the toe of the slope
(4) Construction of the house at the upper part of slope



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	1	9

Photo sheet

Date	*June 16, 2012*

Ph-1 Full view

Ph-2 Rock Fall

Ph-3 Cracks on the road (Upper road)

Ph-4 Damage on house

Ph-5 Toe of the slope

Ph-6 Cracks on the road (Lower road)

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 1 9	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 16, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures	The kinds of landslide countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]
Falling rock at the upper slope and shallow slope failure at the middle and lower slope occured at the housing area. There are slight damage for now although the shallow slope failure and cracks has been confirmed.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Landslide Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

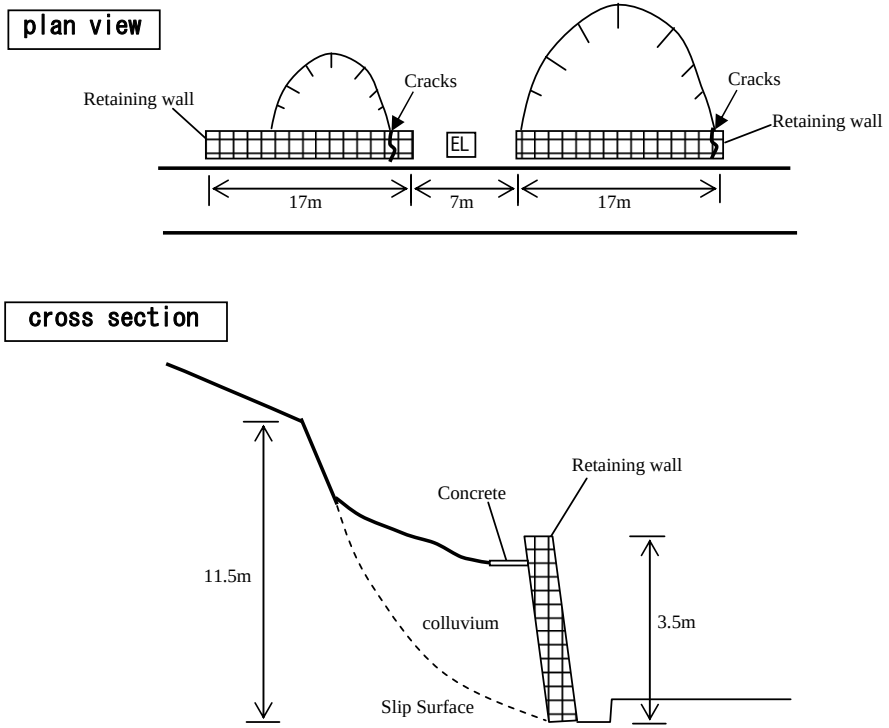
[Land use restrictions in hazard areas]

[Description]

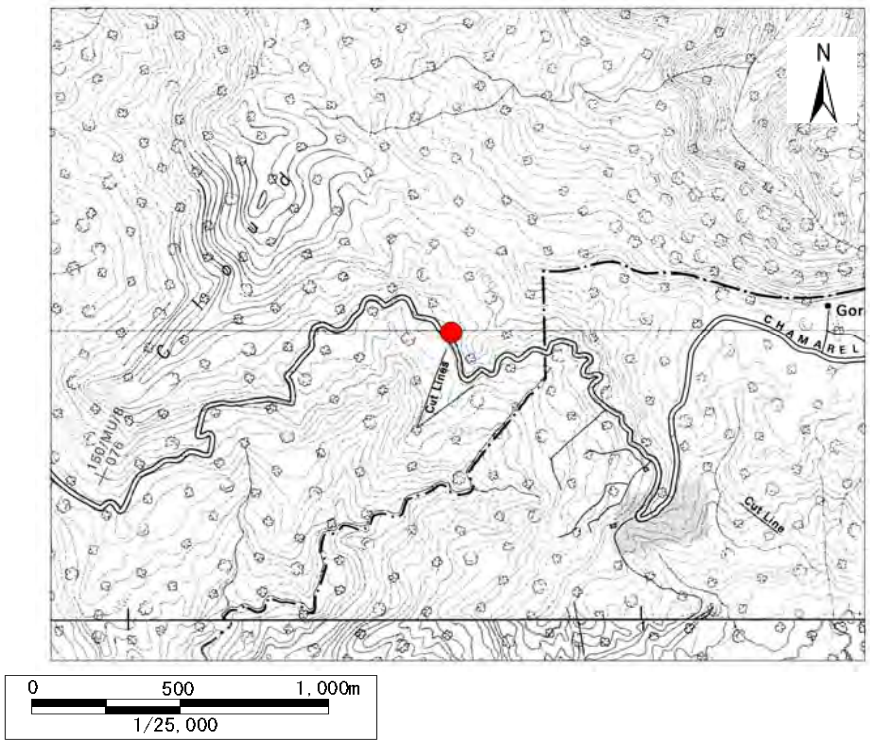
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 2 0			Reporter's name :	*Tomoharu IWASAKI*	*Date of report :*	*June 27, 2012*
Address	*Plaine Champagne Road, opposite "Musee Touche Dubois"*	Type*	Slope failure	latitude	*-20.424294*	longitude	*57.417614*

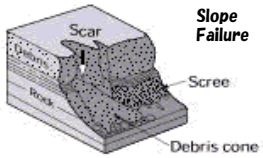
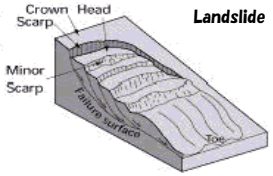
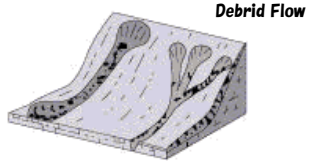
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	2	0

Evaluation sheet

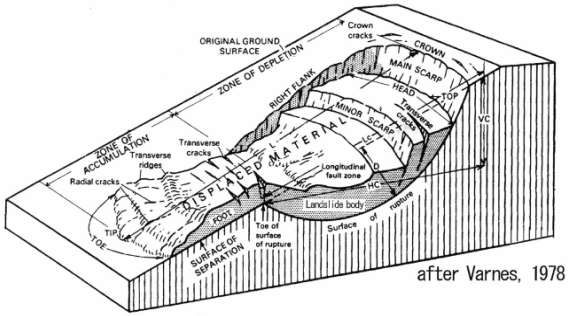
Reporter's name:	*Tomoharu IWASAKI*

[check Point]

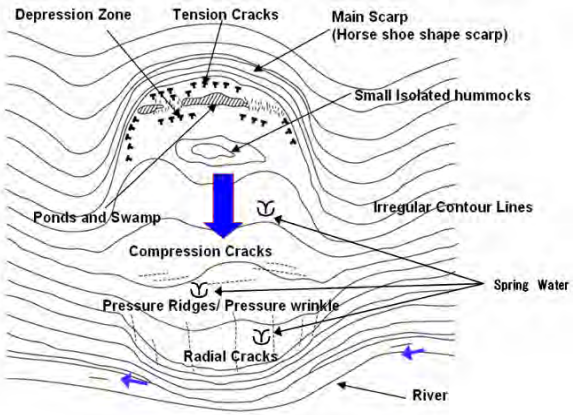
Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number : 2 cracks of walls)	✓
		None		
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			
	Effectiveness of Countermeasure	No effect		
		Some effect		✓
		High effect		

[Description]

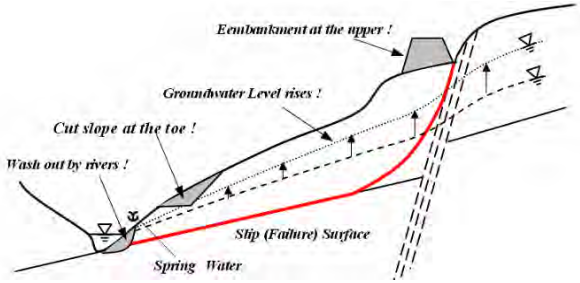
Retaining walls have been constructed as countermeasures where the slope failure has been confirmed. It is currently stable, although there were a few cracks spotted in the retaining walls which are believed to be due to substandard construction.



Structure of a landslide



Schematic diagram of landslide landforms



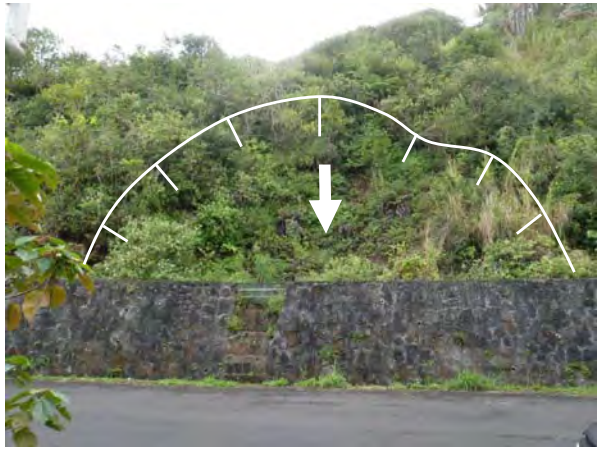
Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	2	0

Photo sheet

Date	*June 27, 2012*

Ph-1 Full view (Retaining wall)



Ph-2 Trace of past slope failure

Ph-3 Trace of past slope failure

Ph-4 Cracks on retaining wall

Ph-5 Cracks on retaining wall

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 2 0	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 27, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
Retaining wall	2

[The Photo of Countermeasure]

Ph-1 Countermeasure (Retaining walls)

[Description]
The retaining walls was constructed as countermeasures where the slope failure has been confirmed. It is stable although there were a few cracks spotted within retaining walls which is believed to be the construction failure.
It is not necessary to take a countermeasure immediately, but should be observed.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

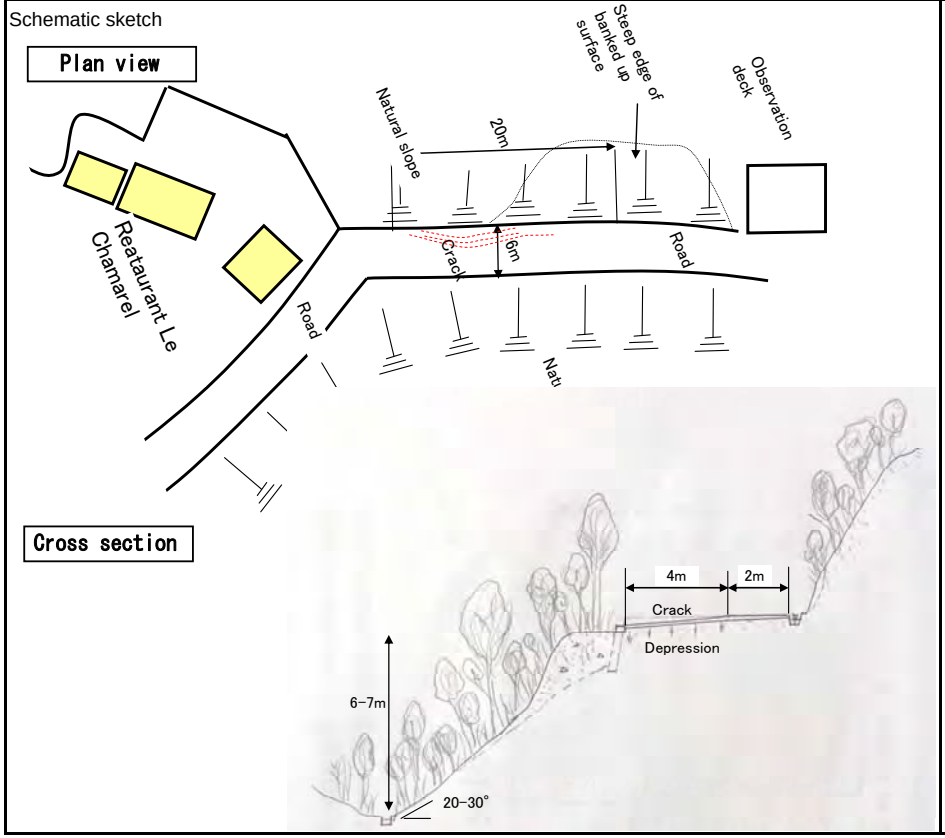
[Land use restrictions in hazard areas]

[Description]

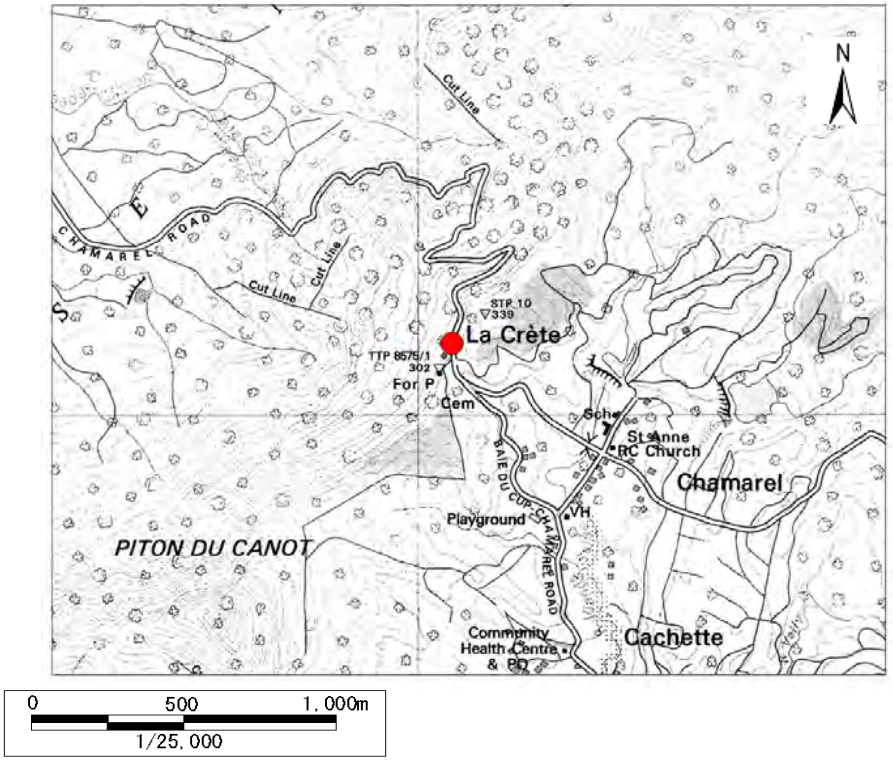
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 2 1	Reporter's name :	YoujiKASAHARA	Date of report :	June 27, 2012
Address	Chamarel : (i) near Reataurant Le Chamarel	Type*	Damage of Embankment	latitude	-20.421694	longitude	57.386336

Schematic sketch



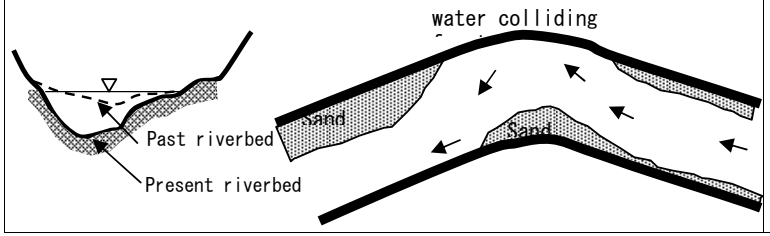
Location map （Scale: 1:25,000)



*** Description of "Type"**

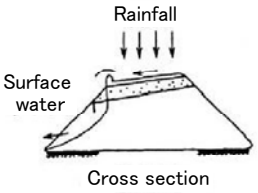
River bank erosion

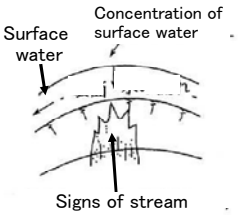
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	2	1

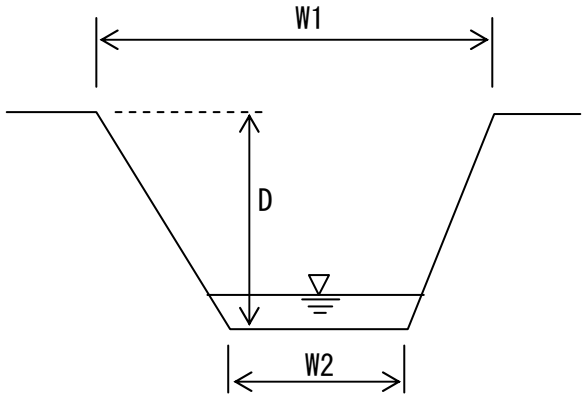
Evaluation sheet

Reporter's name:	*YoujiKASAHARA*

[check Point]

Category					Record
Stream	Structure	Figure / size	W1 : Width of the river		m
			W2 : Width of the riverbed		m
			D : Depth of the river		m
		Type	Right bank		Soil or Natural ground / Artificial structure
			Left bank		Soil or Natural ground / Artificial structure
		Box culvert	W : Width		m
			H : Height		m
		Pipe culvert	D : Diameter		m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	✓
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	

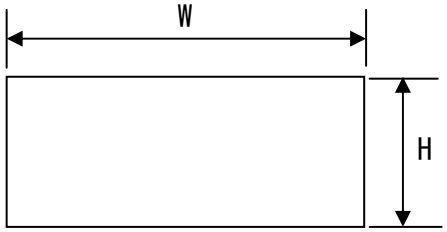


Structure of a river

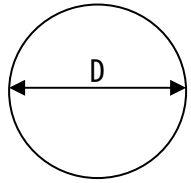
[Description]

Cracks in the road shoulder have occurred due to a lack of bearing capacity .
The crack is located in the vicinity of the boundary of the cutting ground and the fill.
The subsidence of the road is 10-15cm.
The soil compaction is insufficient.
The fill material is soft.

It is caused by insufficient soil compaction.



Box culvert

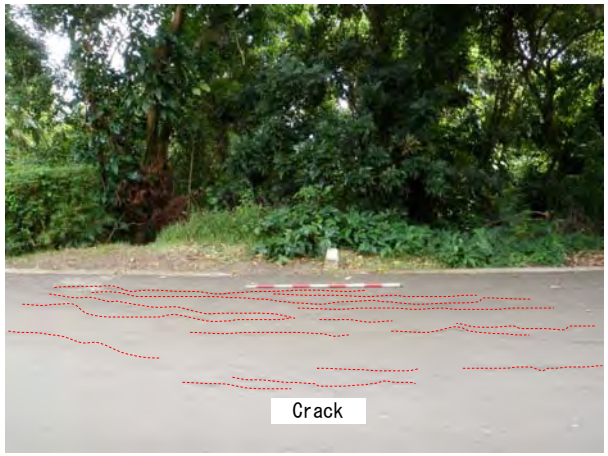


Pipe culvert

Management Number	0	0	0	0	0	0	0	0	2	1

Photo sheet

Date	*June 27, 2012*



Ph-1 Crack on road side

Restaurant

Ph-2 Crack on road side

Ph-3 The crack occured in the road sea side shoulder.
(By the damage of differential settlement)

Ph-4 Slope under shoulder

Ph-5 Waterway under slope

Ph-6 Road constructed with fill

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	2	1

Reporter's name:	YoujiKASAHARA	Date of report :	June 27, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Retaining wall	1

[The Photo of Countermeasure]

None	None
Non	[Description] The road of the cliff side submerged(10-15cm) causing cracks on the asphalt surface. It is caused by insufficient soil compaction. Further observation will be necessary.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

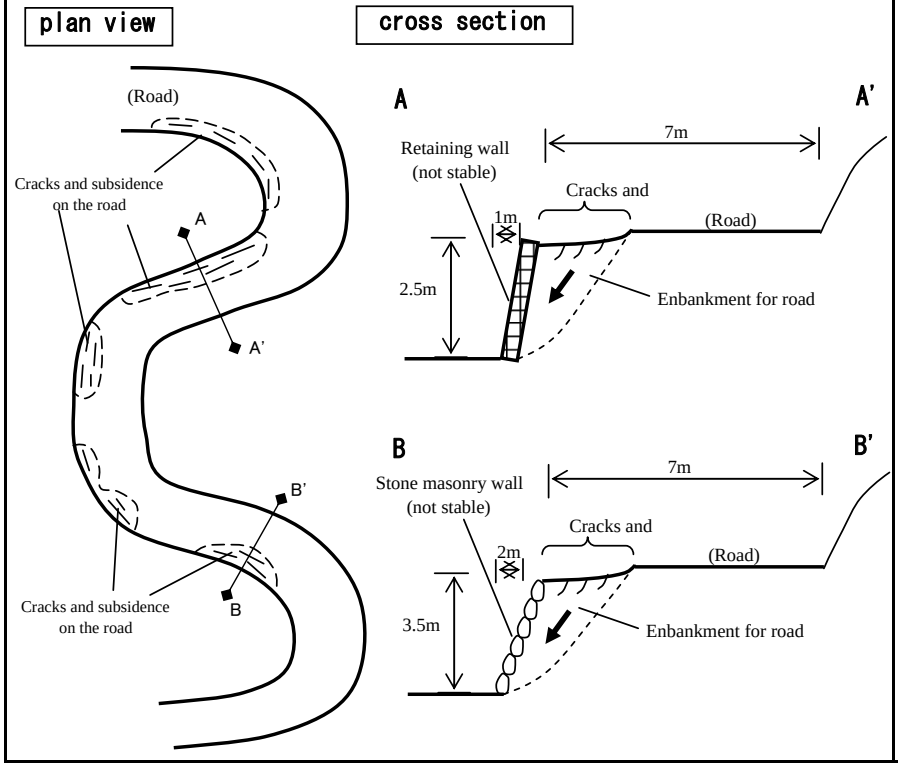
[The Photo of Monitoring Equipment]

	[Resident's awareness and relocation] [Land use restrictions in hazard areas] [Description]

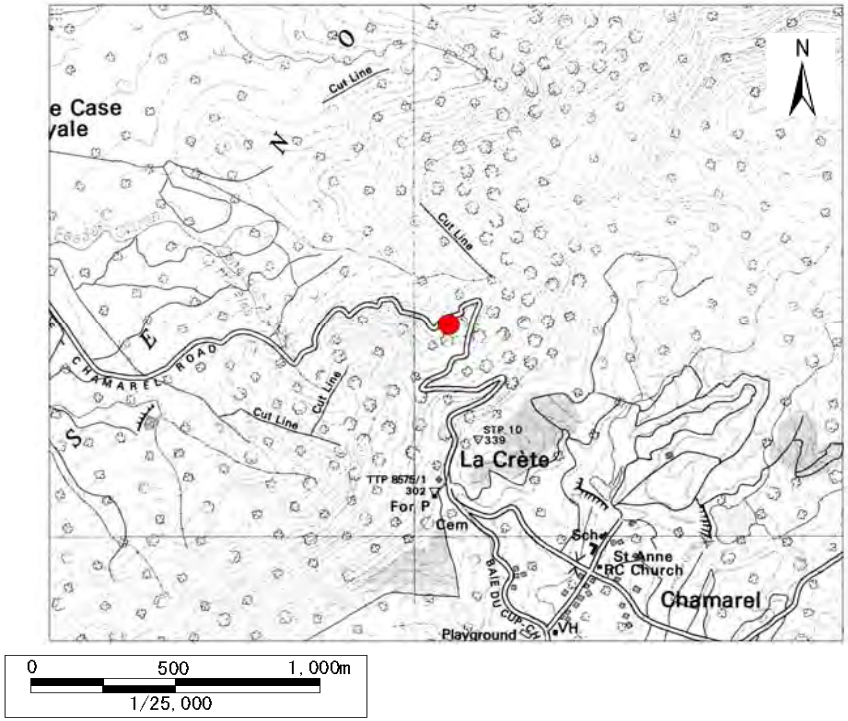
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 2 2	Reporter's name:	Tomoharu IWASAKI	Date of report :	June 27, 2012
Address	Chamarel : (ii) Roadside	Type*	Damage of Embankment	latitude	-20.416861	longitude	57.3863

Schematic sketch



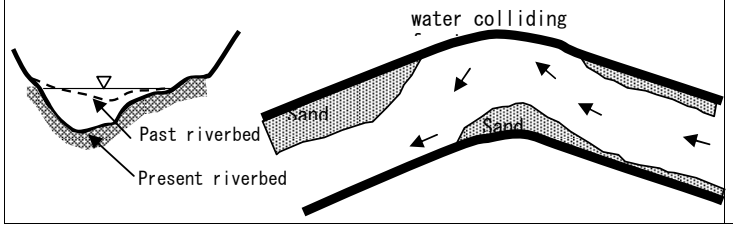
Location map （Scale: 1:25,000)



*** Description of "Type"**

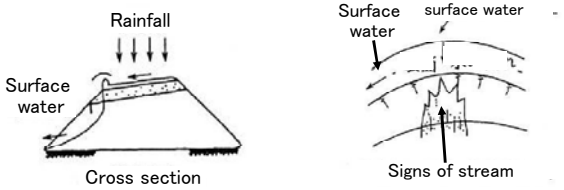
River bank erosion

The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.



Mangement number	0	0	0	0	0	0	0	0	2	2

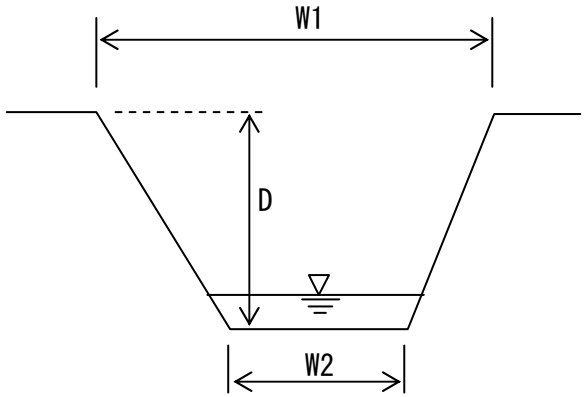
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size	W1 : Width of the river		m
			W2 : Width of the riverbed		m
			D : Depth of the river		m
			Type	Right bank	Soil or Natural ground / Artificial structure
				Left bank	Soil or Natural ground / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

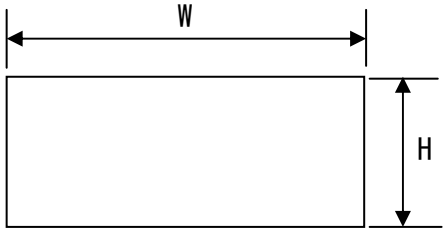
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	✓
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	✓
		Some effect	
		High effect	



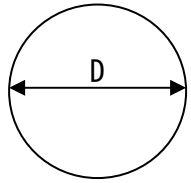
Structure of a river

[Description]

Deformation of the road has been confirmed at the shoulder of the road due to a lack of bearing capacity.
The embankment of stone masonry wall and retaining wall were constructed but it is insufficient.
Therefore, the re-construction of the retaining wall and stone masonry wall will be necessary in the near future.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	2	2

Photo sheet

Date	*June 27, 2012*

Ph-1 Full view (Cracks and subsidence on the road)

Ph-2 Retaining wall of the road shoulder (A-A' cross section)

Ph-3 Stone masonry wall of the road shoulder (B-B' cross section)

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	2	2

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 27, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Retaining wall	1
	Stone masonry wall	1

[The Photo of Countermeasure]

Ph-1 Retaining wall

Ph-2 Stone masonry wall

[Description]
Deformation of the road has been confirmed at the cliff side of the road due to the lack of bearing capacity. The embankment of stone masonry wall and retaining wall are constructed but it is insufficient. Therefore, the re-construction of the retaining wall and stone masonry wall will be necessary in the near future.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

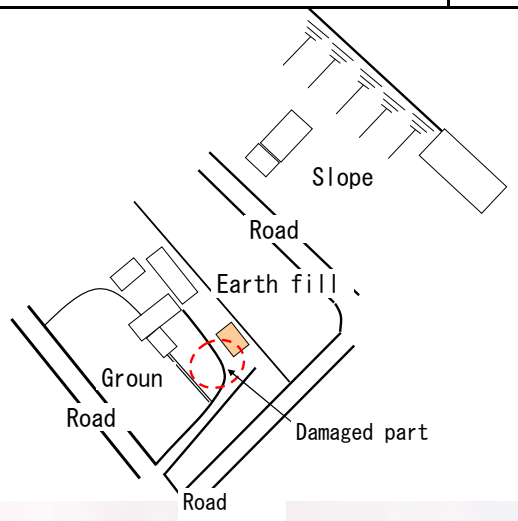
[Description]

General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 2 3	Reporter's name :	Youji /KASAHARA	Date of report :	June 27, 2012
Address	Gremde Riviere Noire Village Hall	Type*	Damage of house	latitude	-20.359844	longitude	57.371564

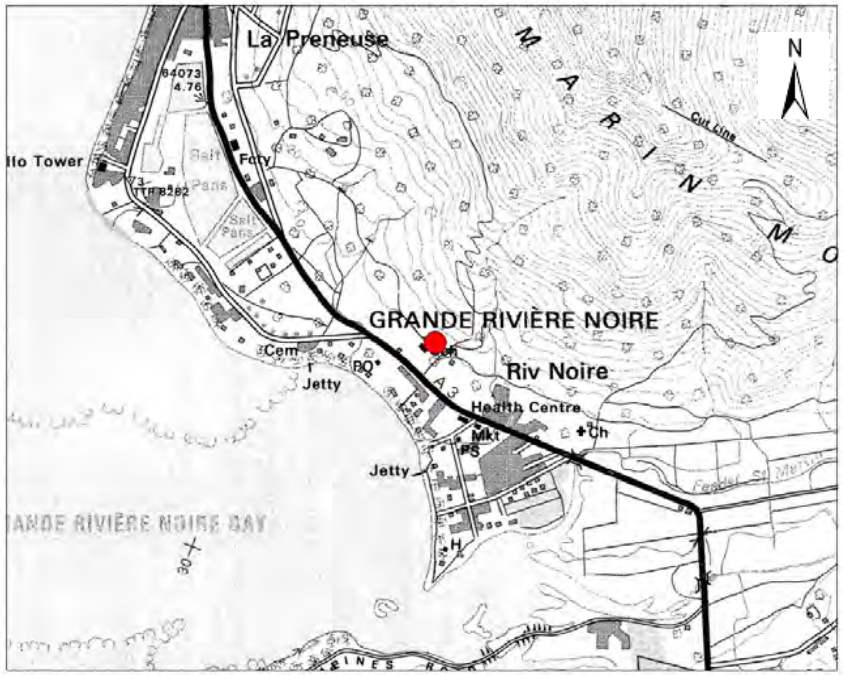
Schematic sketch

plan view



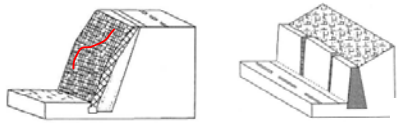
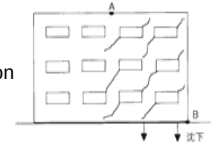
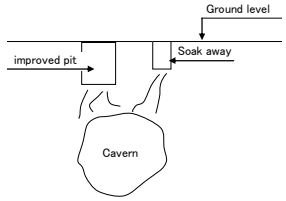
cross section

Location map （Scale: 1:25,000)



0 500 1,000m
1/25,000

*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other
		

Mangement number	0	0	0	0	0	0	0	0	2	3

Evaluation sheet

Reporter's name:	*Youji /KASAHARA*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		Stone masonry / Other
	H : Height of the retaining wall	m
	L : Length of the retaining wall	m
	D : Thickness of the retaining wall	m
	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	m
	L : Length of the cavern	m
	D : Depth of the cavern	m
	Situation above the cavern	improved pit / soak away /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	✓
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	

[Description]

The crack at the base of village hall area and edge of concrete basketball court has been confirmed. However, the surrounding structures are not affected, therefore it is considered unlikely this damaged was caused by landslides. Rather it is likely to be caused by lack of bearing capacity of the ground or a problem with the structure itself.

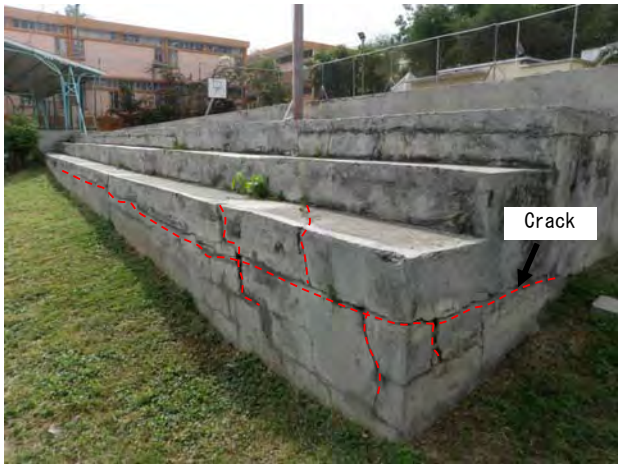
Management Number	0	0	0	0	0	0	0	0	2	3

Photo sheet

Date	*June 27, 2012*

Ph-1 Full view of Black River Government School

Ph-2 Cracks of wall (by differantial settlement)



Ph-3 Horizontal crack of the Concrete step

Ph-4 Full view on sea side

Ph-5 Non dimensions in the wall

Ph-6 Sutiation in the back of School (fill-up ground)

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	2	3

Reporter's name:	Youji /KASAHARA	Date of report :	June 27, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

None	None
None	[Description] The crack at the base of village hall area and edge of concrete basketball court has been confirmed. However, the surrounding structure are not affected and unlikely to think the damged was caused by lanslides. It would rather caused by lack of bearing capacity of the ground or problem on structure itself.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

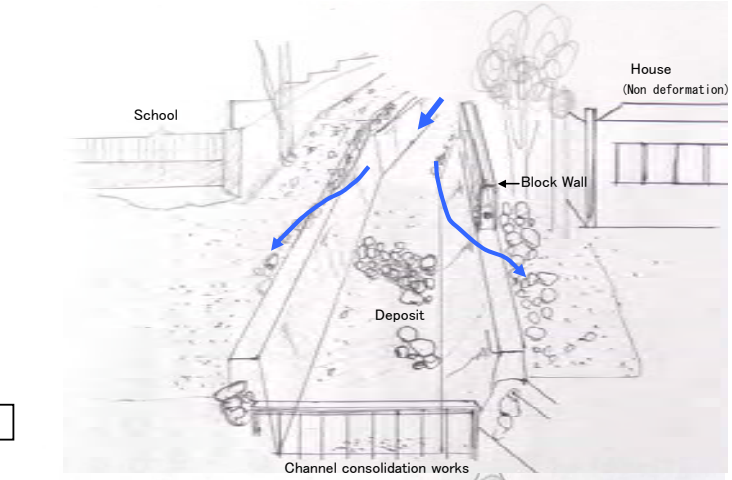
	[Resident's awareness and relocation] [Land use restrictions in hazard areas] [Description]

General Information Sheet (Slope)

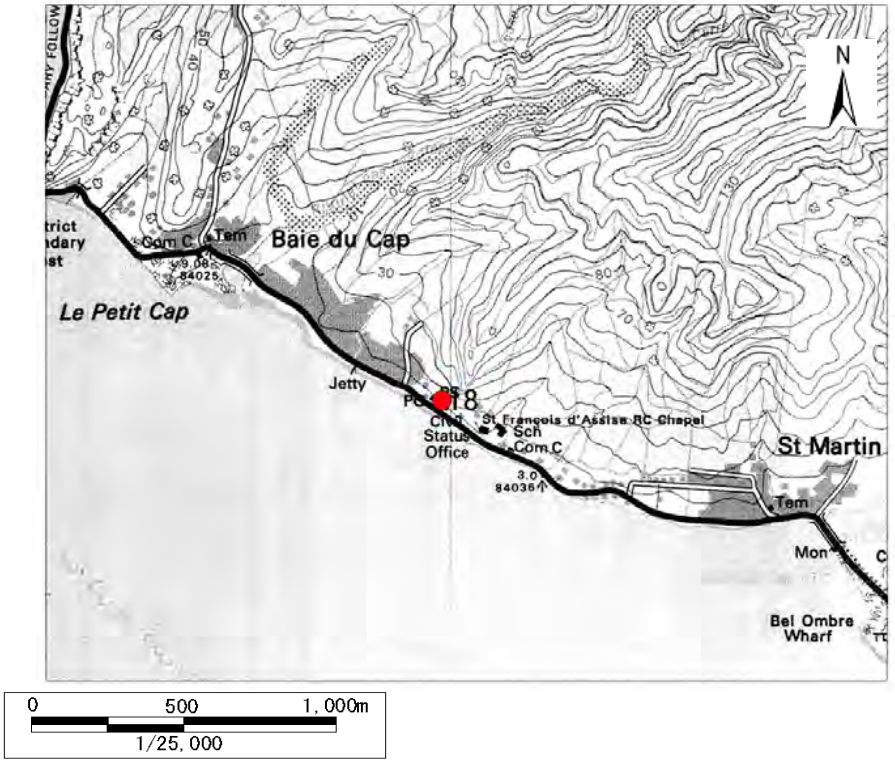
Management number	0 0 0 0 0 0 0 0 2 4	Reporter's name :	Youji KASAHARA	Date of report :	June 28, 2012
Address	Baie du Cap : (i) Near St Francois d'Assise Church	Type*	Debris flow	latitude	-20.496442	longitude	57.384422

Schematic sketch

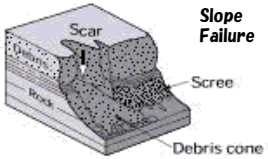
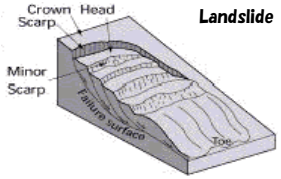
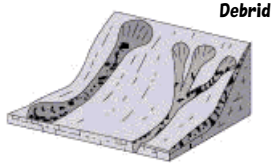
Cross section



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	2	4

Evaluation sheet

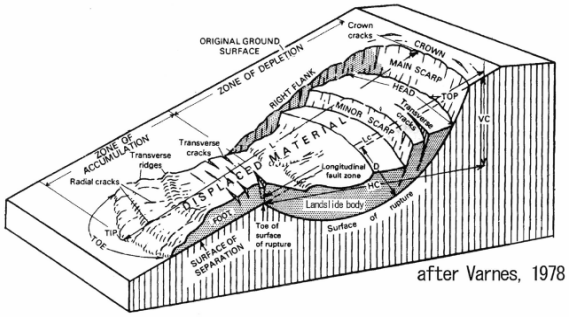
Reporter's name:	*Youji KASAHARA*

[check Point]

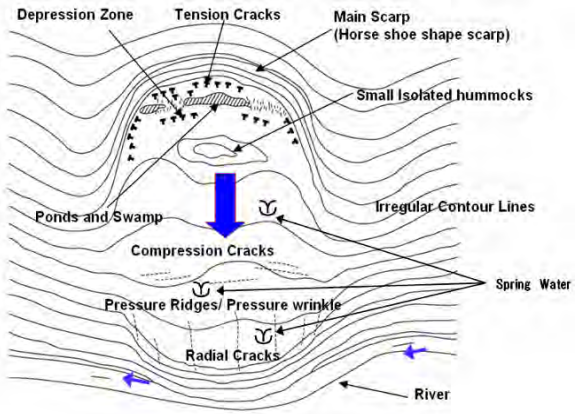
Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(name: road , number: 1)	✓
		Slight	(name: , number:)	
		None		
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			
	Effectiveness of Countermeasure	No effect		
		Some effect		✓
		High effect		

[Description]

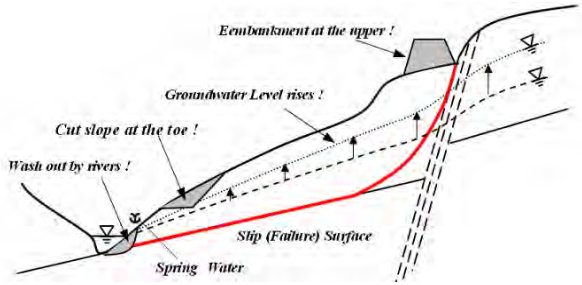
A debris flow has occurred in the past and a block wall has since been constructed. The water level rises considerably in the rainy season, soil and gravel might flow out on the road. Also, small surface failures have been observed frequently in this area.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	2	4

Photo sheet

Date	*June 28, 2012*

Ph-1 Full view of the channel works

Ph-2 Unstable deposit in channel works

Ph-3 The upstream of channel works

Ph-4 Box culvert

Ph-5 Discharged sedimet at the mouth of stream

Ph-6 Discharged sedimet at the mouth of stream

Management Number	0	0	0	0	0	0	0	0	2	4

Photo sheet

Date	*June 28, 2012*

Ph-1 Full view of overcrowded house

Ph-2 Shore terrace where it faces road

Ph-3 Shore terrace where it faces road

Ph-4 Slope where outflow of gravel and soil are expected

Ph-5 Surface collapse of slope

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	2	4

Reporter's name:	Youji KASAHARA	Date of report :	June 28, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Channel consolidation works	1

[The Photo of Countermeasure]

[Description]
It is not enough though the valley shore erosion is prevented by channel works.
There is a possibility that the stream begins to overflow from channel works in the rainy season. It is necessary to extend the upstream side channel works in the future.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

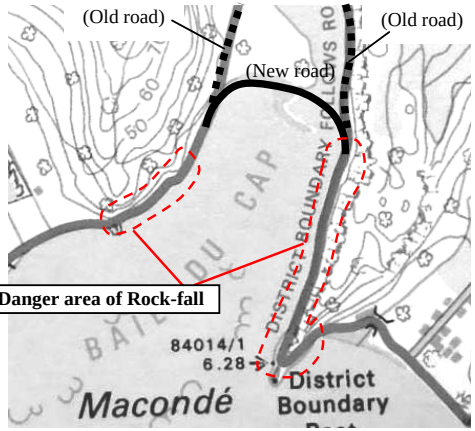
[Description]

General Information Sheet (Slope)

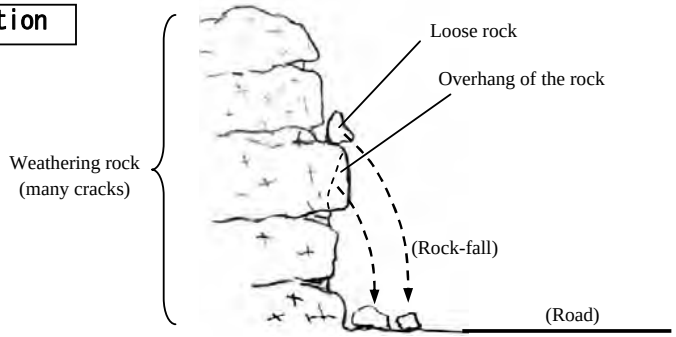
Management number	0 0 0 0 0 0 0 0 2 5		Reporter's name :	Tomoharu IWASAKI	Date of report :	June 28, 2012
Address	Baie du Cap :(ii) Maconde Region	Type*	Rock fall	latitude	-20.490014	longitude 57.371461

Schematic sketch

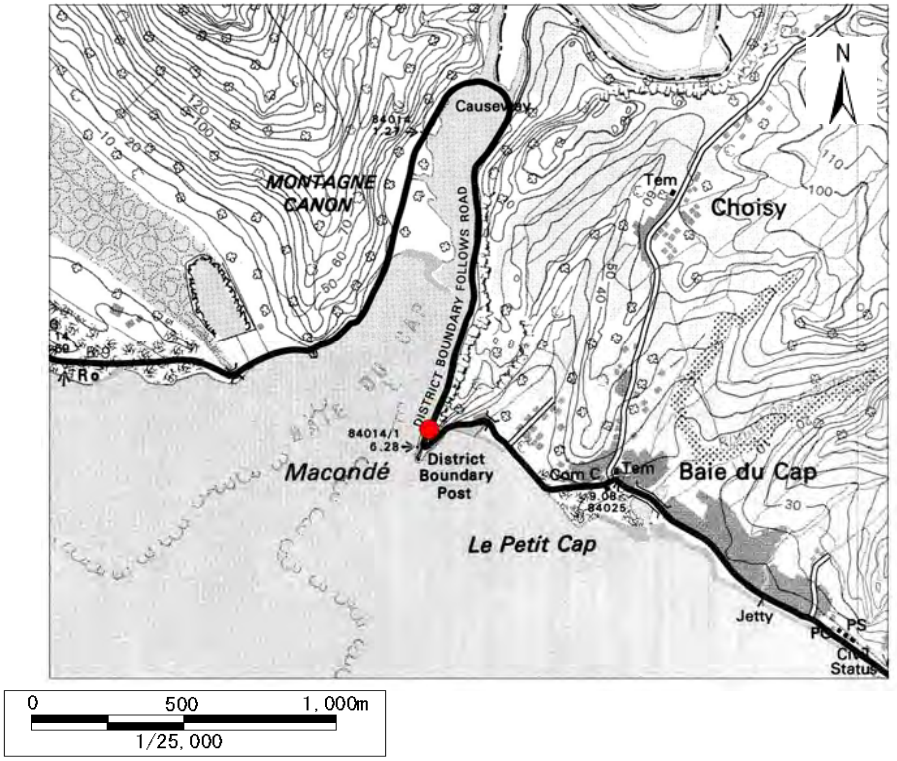
plan view



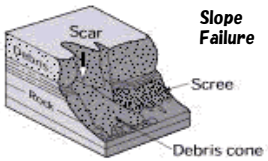
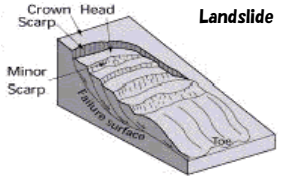
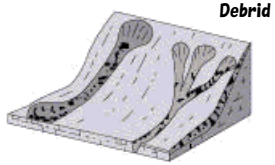
cross section



Location map （Scale: 1:25,000)



* **Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	2	5

Evaluation sheet

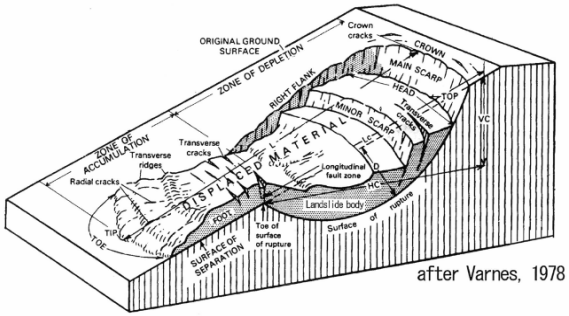
Reporter's name:	*Tomoharu IWASAKI*

[check Point]

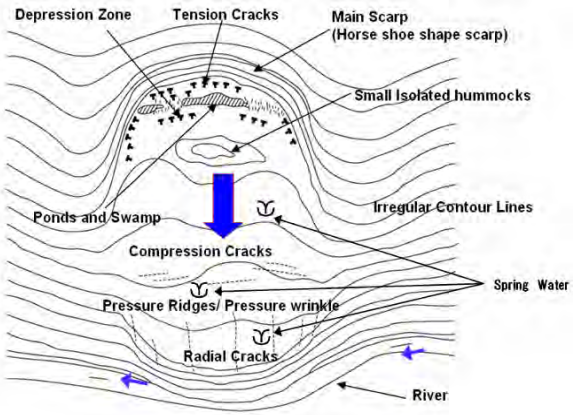
	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number :)	
		None		✓
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

[Description]

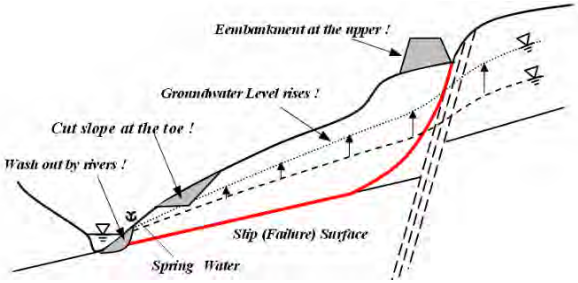
A new road was built to reduce the damage from rock falls. However, rock falls and small rock failures are also a frequent occurance along the new road. The rocks are weathered, and there is a high possibility of rock fall in future.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	2	5

Photo sheet

Date	*June 28, 2012*

Ph-1 Full view

Ph-2 The rock constituting a cliff (many cracks and weathering intensely)

Ph-3 Example of the rock fall

Ph-4 Rock fall

Ph-5 Rock fall

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 2 5	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 28, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures	The kinds of landslide countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]
The falling rock and small bedrock decay occurs frequently at the bedrock cliffs along the road. The rocks are weathered and there is a high possibility of rock falling in future.As countermeasures of the falling rock, you should consider the setting such as rock nets.

(Sample of the rock net)

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Landslide Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

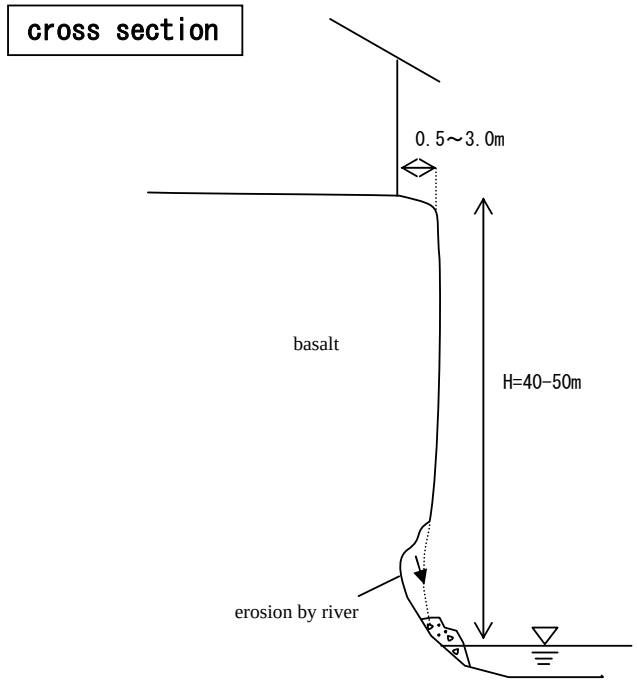
[Description]

General Information Sheet (Other)

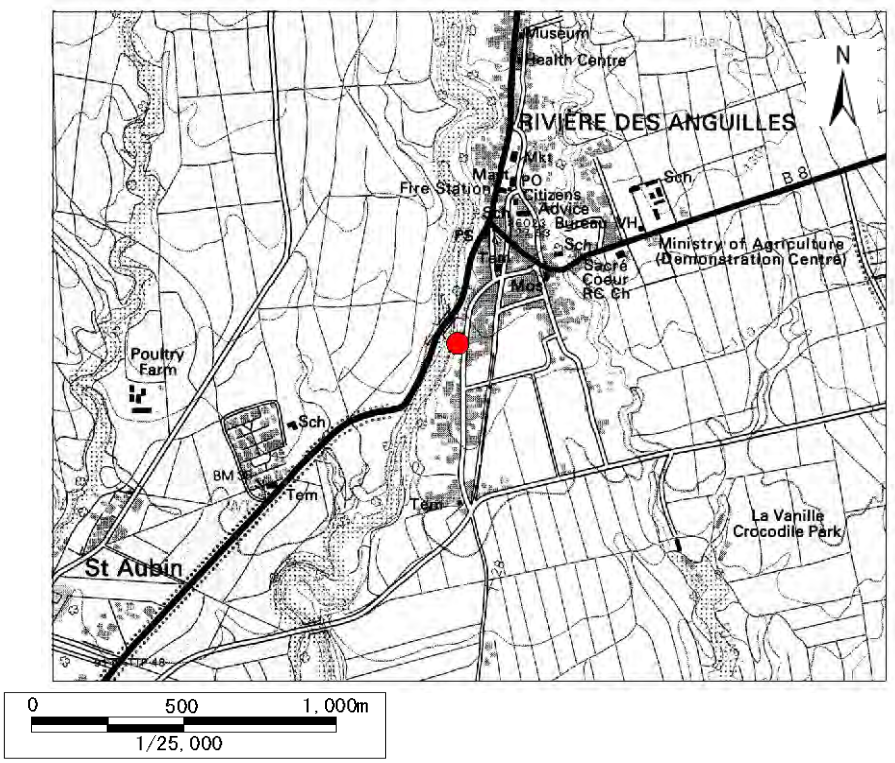
Management number	0 0 0 0 0 0 0 0 2 6	Reporter's name :	Ai Togami	Date of report :	June 18, 2012

Address	Riviere des Anguilles, near the bridge	Type*	Stream erosion	latitude	-20.49375	longitude	57.555778

Schematic sketch



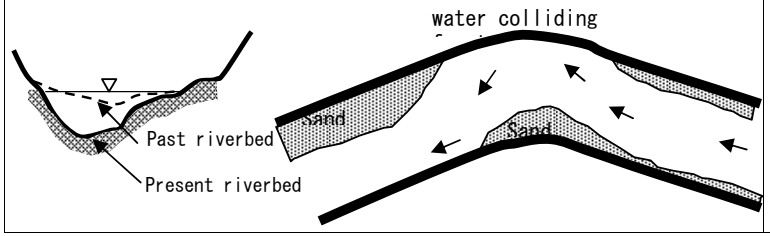
Location map （Scale: 1:25,000)



*** Description of "Type"**

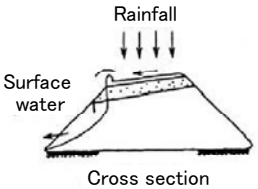
River bank erosion

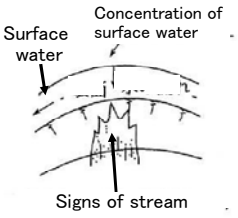
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	2	6

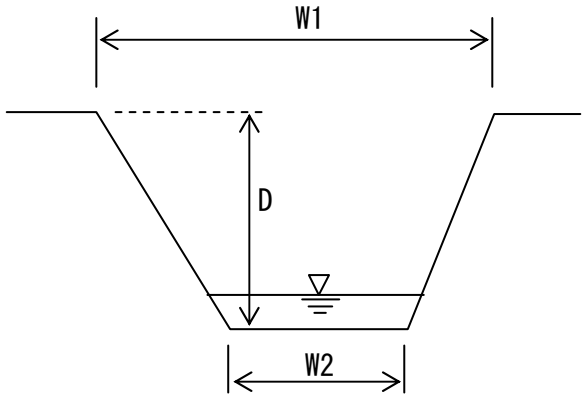
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size	W1 : Width of the river		- m
			W2 : Width of the riverbed		- m
			D : Depth of the river		40-50 m
			Type	Right bank	(Soil or Natural ground) / Artificial structure
				Left bank	(Soil or Natural ground) / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				(Erosion)
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

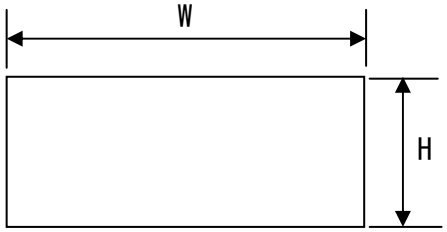
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



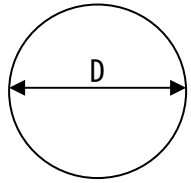
Structure of a river

[Description]

There are many houses built on the cliff here. The cliff is weathered severly and stream erosion occurs frequently. Therefore, the house will need to be relocated.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	2	6

Photo sheet

Date	*June 18, 2012*

Ph-1 Full view

Ph-2 cave in slope

Ph-3

Ph-4 relation slope and house

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 2 6	Reporter's name:	*Ai Togami*	Date of report :	*June 18, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
None	

[The Photo of Countermeasure]

None

None

None

[Description]
There were many houses built on a cliff.The cliff are weathered severly and the stream erosion occurs frequently. Therefore, the relocation of the houses will be necessa

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

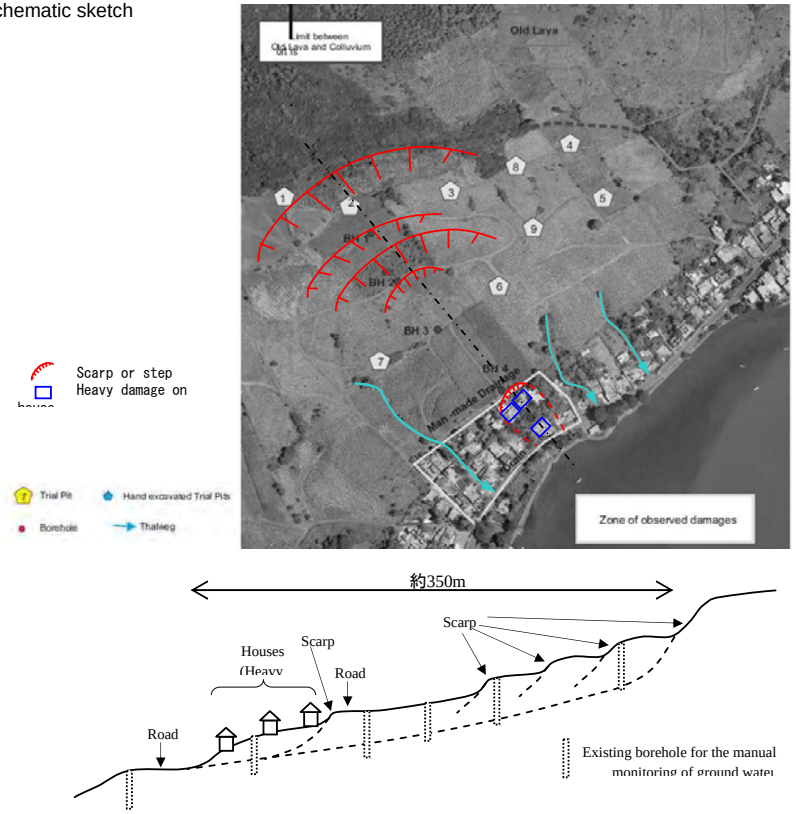
[Land use restrictions in hazard areas]

[Description]

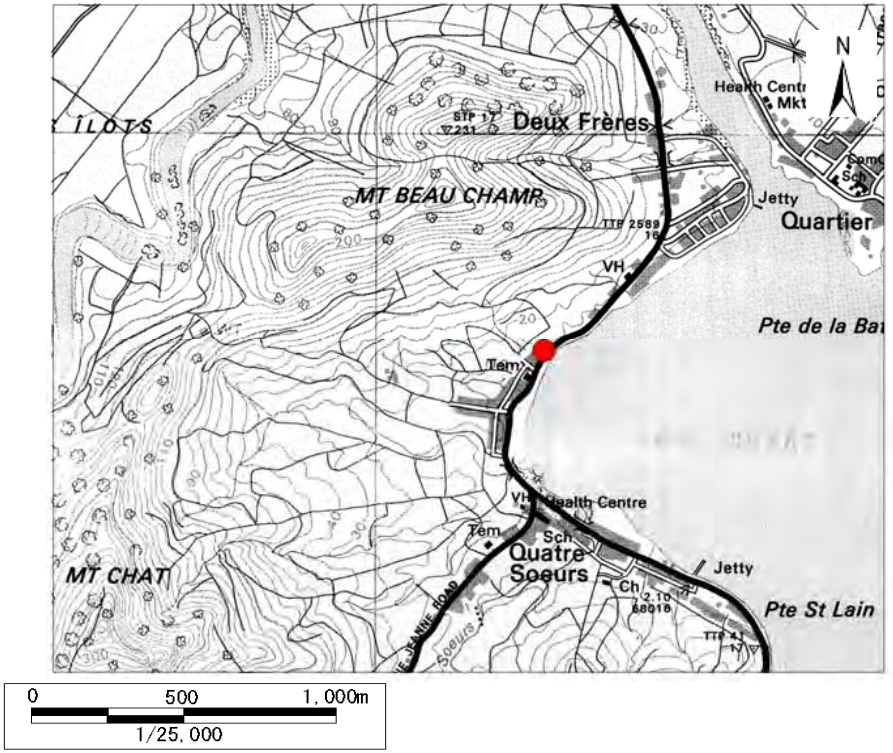
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 2 7		Reporter's name :	Tomoharu IWASAKI	Date of report :	June 18, 2012
Address	Quatre Soeurs, Marie Jeanne, Jhummah Streert, Old Grand Port	Type*	Landslide	latitude	-20.424294	longitude 57.417614

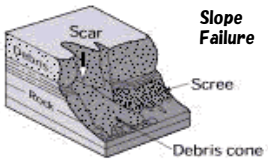
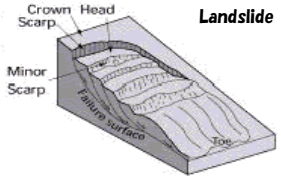
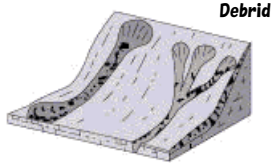
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	2	7

Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

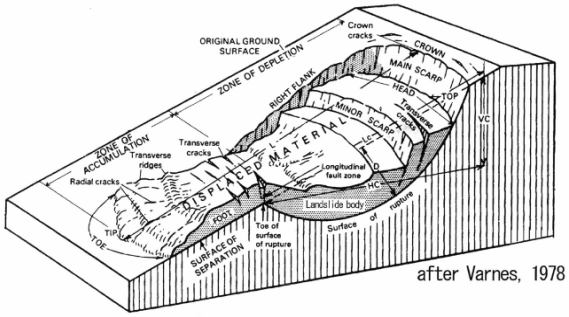
[check Point]

	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(number : 5 houses)	✓
		Slight	(number :)	
		None		
	Monitoring Equipment	There is it	(name: Borehole for Ground Water Level, number: 6)	✓
		There is it	(name: , number:)	
		none		
History	Existing record of Landslide (documents or patrimony)	Obvious	(Document, 2011)	✓
		slight		
		none		
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

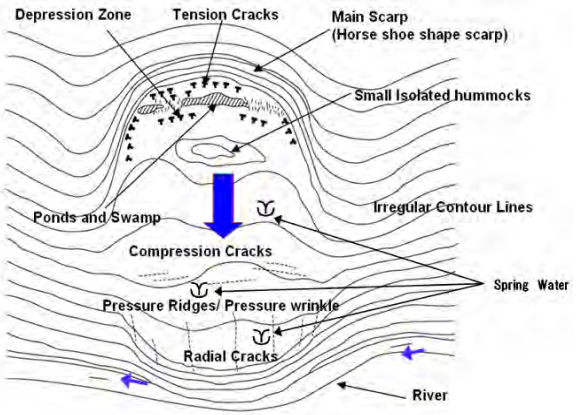
[Description]

Landslide activity has been confirmed at the Quatre Soeurs area where many houses have been damaged. This landslide shows some typical characteristics as follows,
(1) Scarps (Horse shoe Scarp),
(2) Steps on Tension Cracks.
(3) Cut Slope at toe (for road and house)
The groundwater level at the lower part of the landslide is high and is causing instability in the landslide. Drilling investigation and monitoring have been carried out, but not sufficiently. Further investigation and monitoring are necessary while the countermeasures are expected in future.
L=350m ,W=400m

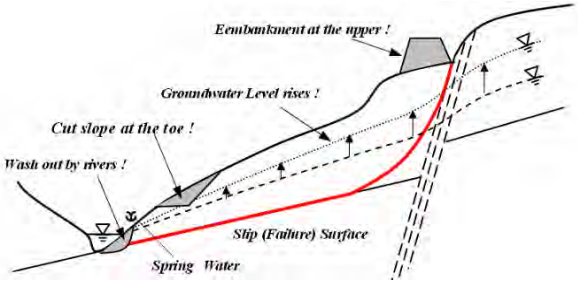
Existing record of Landslide(documents) : GEOTECHNICAL REPORT FOR SUSPECTED LANDSLIDE AT QUATRE SOEURS, MPI, 2011



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	2	7

Photo sheet

Date	*June 18, 2012*

Ph-1 Full view

Ph-2 Scarps of the landslide upper part

Ph-3 Scarps of the landslide upper part

Ph-4 Head crack of a small landslide of the lower part

Ph-5 Existing borehole for the manual monitoring of ground water level

Ph-6 Heavy damage on house

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 2 7	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 18, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
None	

[The Photo of Countermeasure]

[Description]
The landslide is not stable. The countermeasures are expected in future.

Non-structural Measure (Soft-Component)

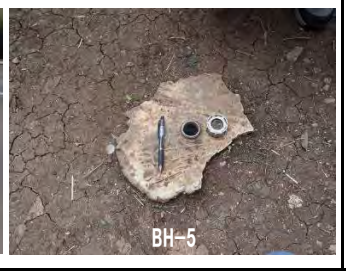
Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number
Existing borehole for ground water level monitoring	6

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]



[Resident's awareness and relocation]
Residents feel danger, and hope for landslide measures or relocation.

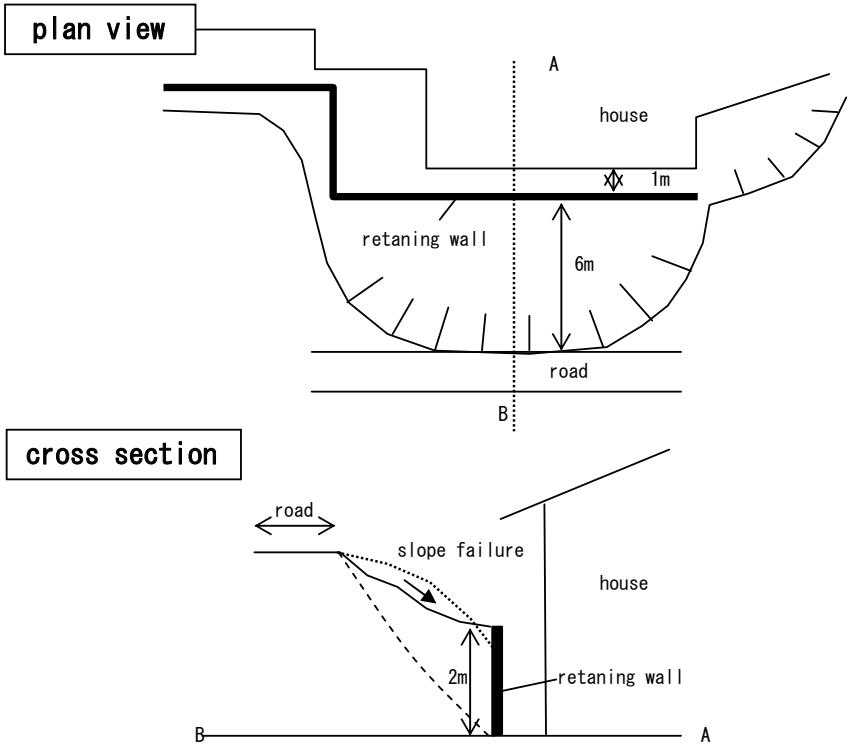
[Land use restrictions in hazard areas]
Non

[Description]
There are 6 existing boreholes for the monitoring of ground water level (Boreohole-No. : BH-1,2,3,4,5,6), However, it is not measured now.

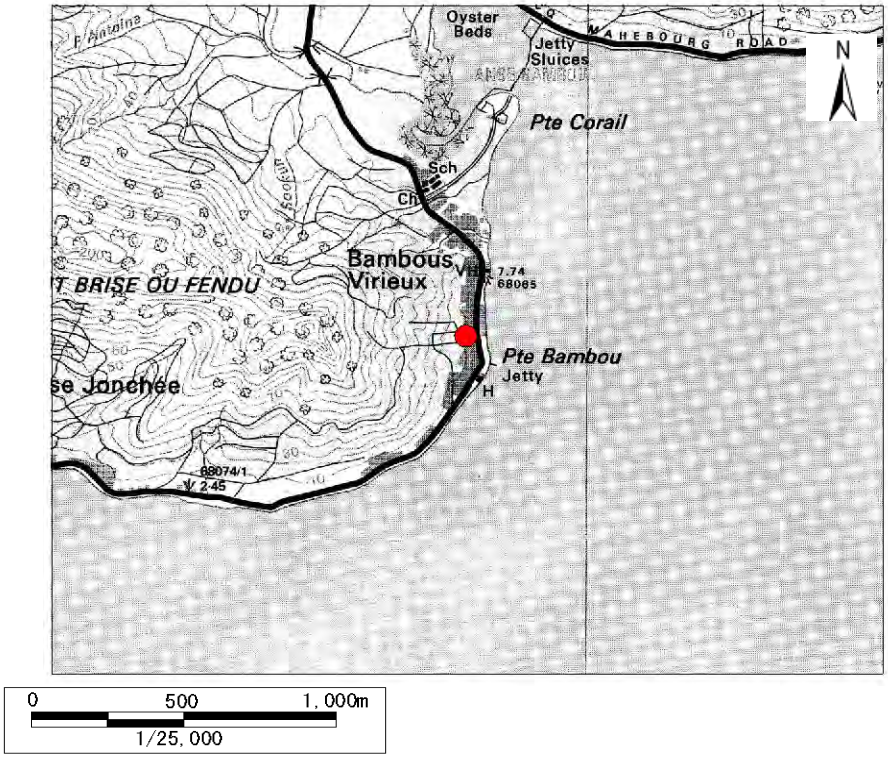
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 2 8		Reporter's name :	Ai Togami	Date of report :	June 18, 2012
Address	Bambous Virieux, Rajiv Gandhi Street (near Bhavauy House), Impasse Bholoa	Type*	Slope failure	latitude	-20.349139	longitude 57.7645

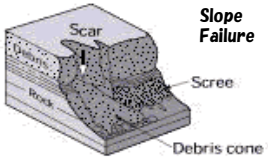
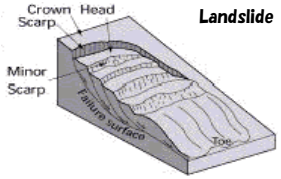
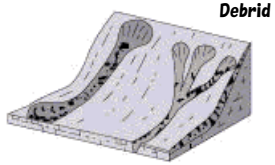
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	2	8

Evaluation sheet

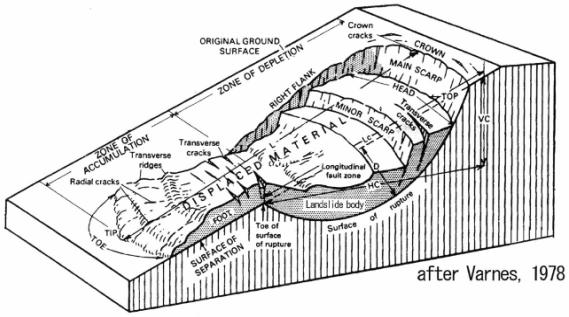
Reporter's name:	*Ai Togami*

[check Point]

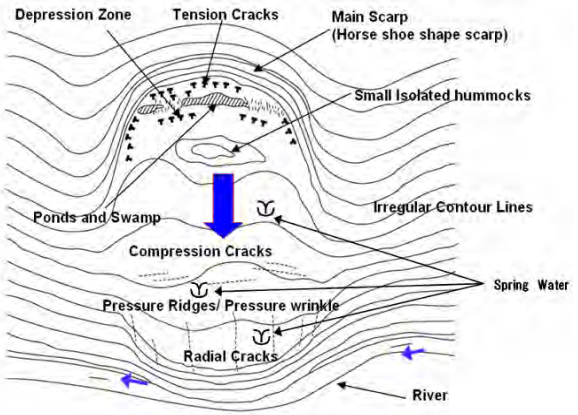
	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(name: Wall , number: 1)	✓
		Slight	(name: , number:)	
		None		
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			
	Effectiveness of Countermeasure	No effect		
		Some effect		✓
		High effect		

[Description]

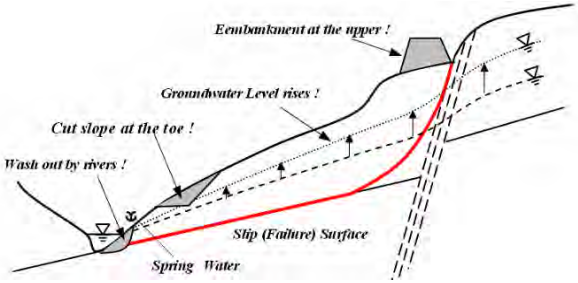
Slope failure was confirmed at the backyard of the house. No damge on the house was reported although the soil of the slope approached near the house. A retaining wall has been constructed independently.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	2	8

Photo sheet

Date	*June 18, 2012*

Ph-1 main scarp

Ph-2 retaining wall

Ph-3 relation retaining wall and house

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	2	8

Reporter's name:	*Ai Togami*	Date of report :	*June 18, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
retaning wall	1

[The Photo of Countermeasure]

[Description]
The retaining wall is constructed independently at the moment. It will be necessary to reinforce a retaining wall.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

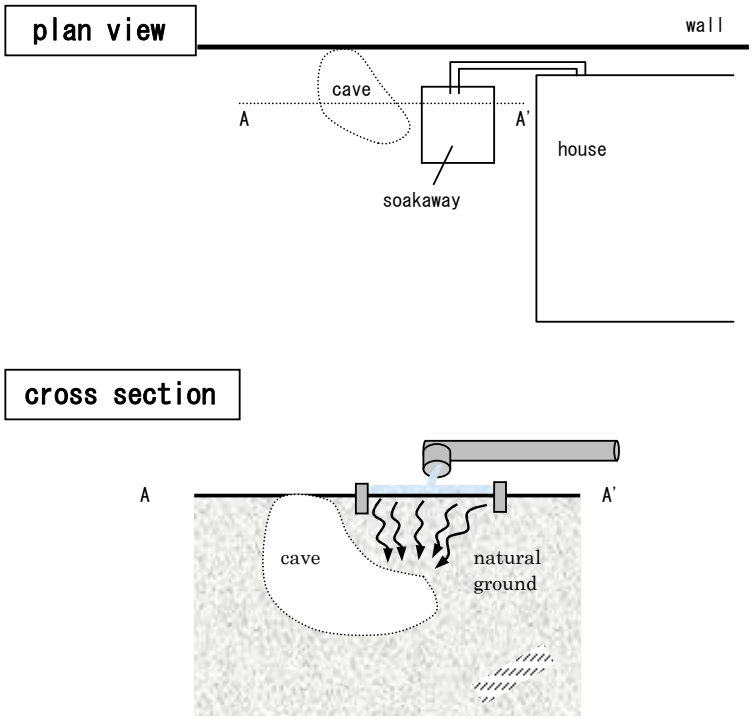
[Land use restrictions in hazard areas]

[Description]

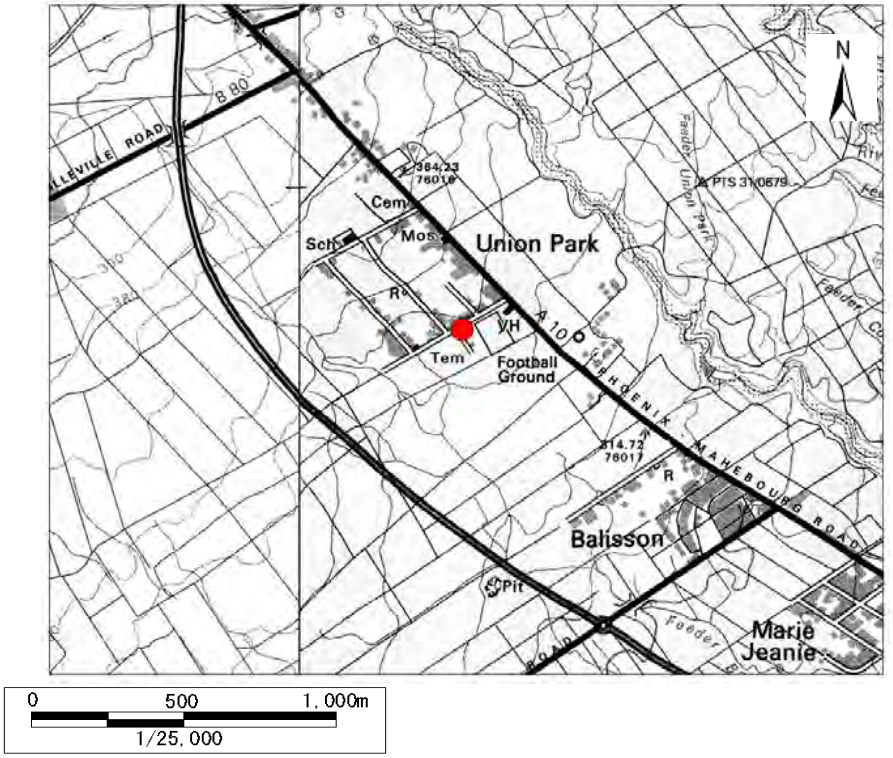
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 2 9	Reporter's name :	Ai Togami	Date of report :	June 28, 2012
Address	Cave in at Union Park, Rose Belle	Type*	Cavern	latitude	-20.390558	longitude	57.582067

Schematic sketch

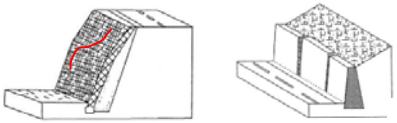


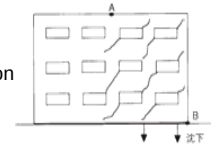
Location map （Scale: 1:25,000)

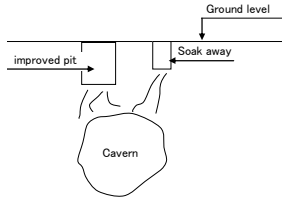


*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other







Mangement number	0	0	0	0	0	0	0	0	2	9

Evaluation sheet

Reporter's name:	*Ai Togami*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		Stone masonry / Other
	H : Height of the retaining wall	m
	L : Length of the retaining wall	m
	D : Thickness of the retaining wall	m
	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	0.5 m (conclusion)
	L : Length of the cavern	1.0 m (conclusion)
	D : Depth of the cavern	0.5-1.0m (conclusion)
	Situation above the cavern	(improved pit) / (soak away) /other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	

[Description]

A cave (4m x 4m x 3m depth) due to land subsidence was observed in the residential area. No damage was caused to the houses and the cave was filled in with soil. Soakaway have to be replaced by the sewer in future.
Similar situation was confirmed nearby.

Management Number	0	0	0	0	0	0	0	0	2	9

Photo sheet

Date	*June 28, 2012*

Ph-1 Full view

Ph-2 cave by groundwater

Ph-3 filled cave

Ph-4 site of another cave

Ph-5 another cave

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 2 9	Reporter's name:	*Ai Togami*	Date of report :	*June 28, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
None	

[The Photo of Countermeasure]

[Description]
It is important to diffuse simplified soakaway to prevent a cave occurence. Replacement of soakaway by the sewer in future will be advisable.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

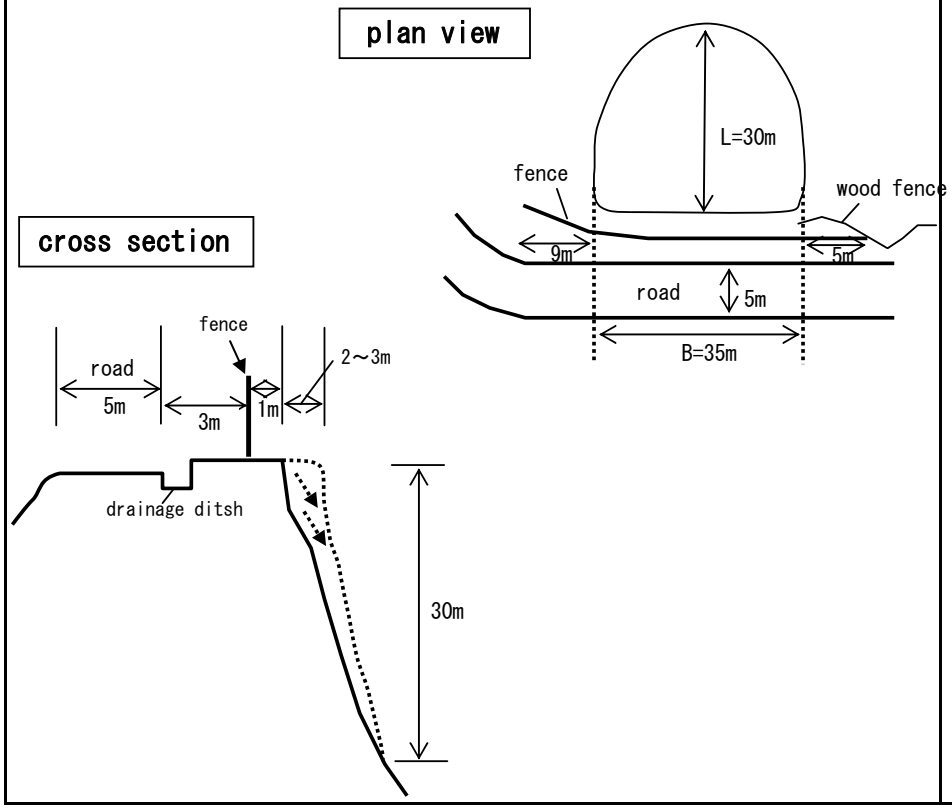
[Land use restrictions in hazard areas]

[Description]

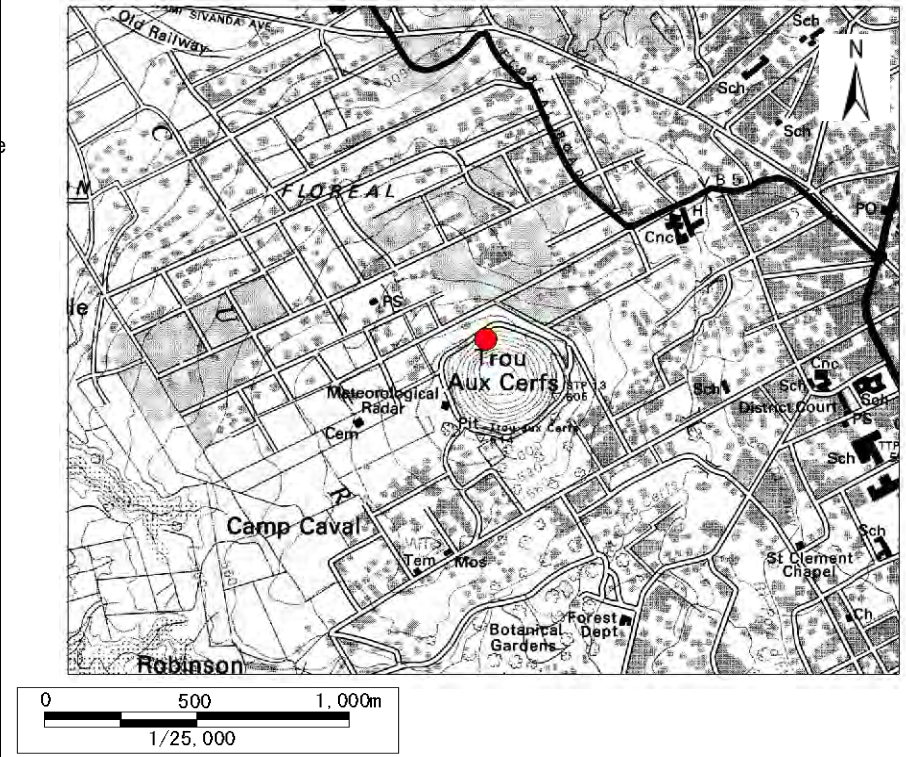
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 3 0	Reporter's name :	Ai Togami	Date of report :	June 12, 2012
Address	Trou-AUX-Cerfs	Type*	Slope failure	latitude	-20.316389	longitude	57.510639

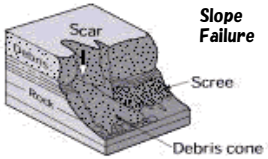
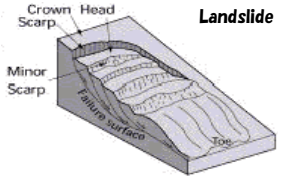
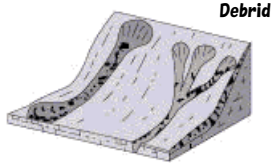
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	3	0

Evaluation sheet

Reporter's name:	*Ai Togami*

[check Point]

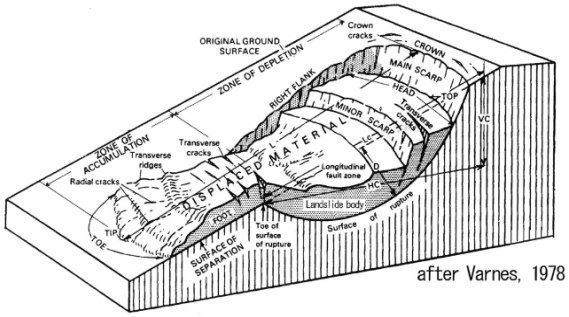
	Category			Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			✓
	Eembankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(name: , number:)	
		Slight	(name: Fence , number: 1)	✓
		None		
	Monitoring Equipment	There is it	(name: , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		✓
		none		
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

[Description]

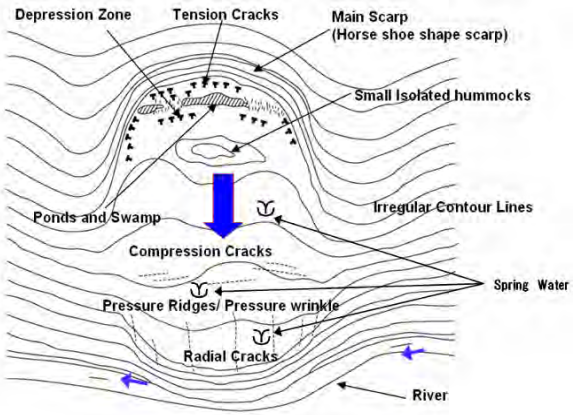
The slope failure in the crater of the volcano occurred during heavy rainfall in 2005.
B=35m、L=30m、D=2～3m

Also, the around area of the slope failure shows some characteristic as follows,
(1)Topography with the step continuously
(2)Some small slope failure

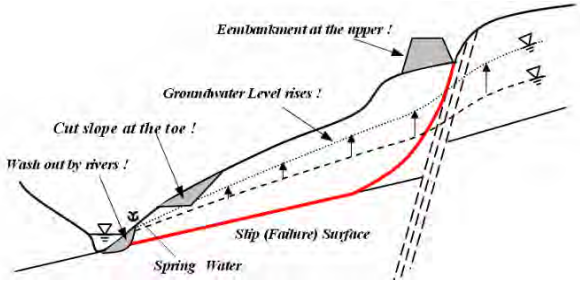
The possibility of slope failure on the rear side is low. However, the slope failure on both sides can be expected.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	3	0

Photo sheet

Date	*June 12, 2012*

Ph-1 Full view of the slope failure

Ph-2 the slope failure
B=35m、L=30m、D=2～3m

Ph-3 the fence in the back of slope failure
It is damaged by slope failure

Ph-4 the back of the slope failure

Ph-5 the around of the slope failure
Topography with the Step continuously

Ph-6 the around of the slope failure
small slope failure

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 3 0	Reporter's name:	*Ai Togami*	Date of report :	*June 12, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures	The kinds of landslide countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Landslide Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

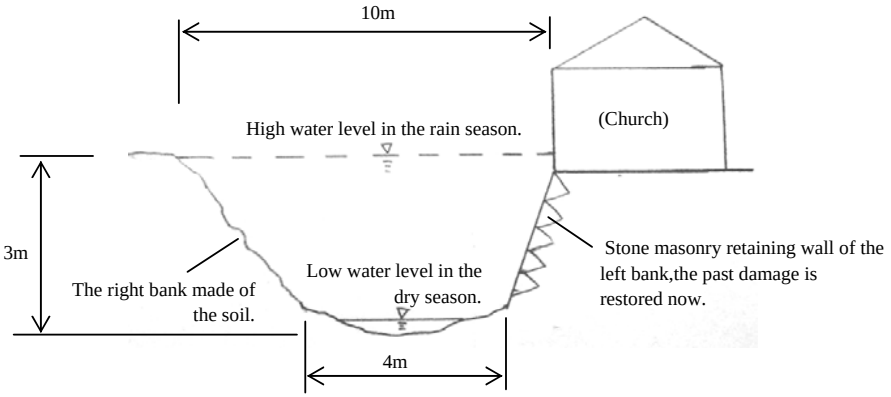
[Land use restrictions in hazard areas]

[Description]

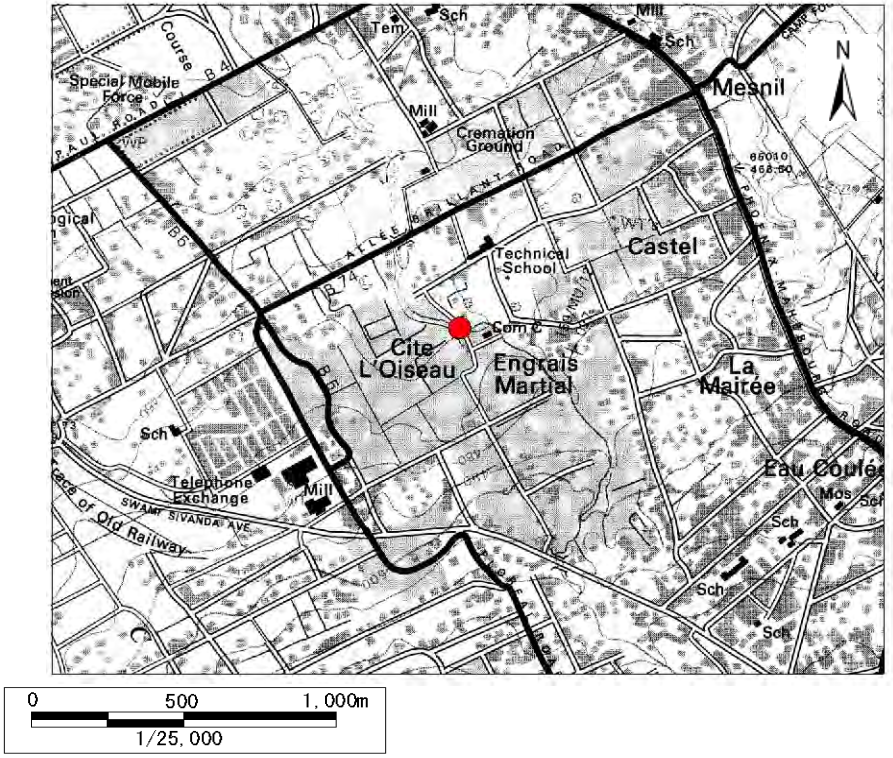
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 3 1		Reporter's name :	Tomoharu IWASAKI	Date of report :	June 12, 2012
Address	River Bank at Cite L'Oiseau	Type*	Stream erosion	latitude	-20.300922	longitude 57.510595

Schematic sketch



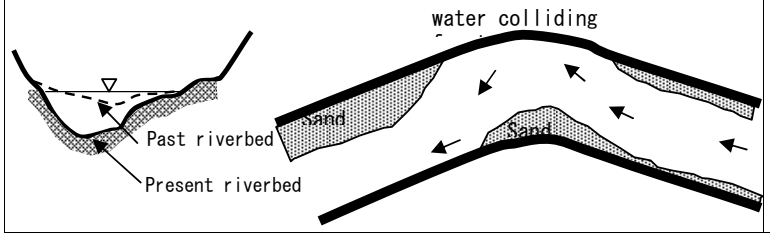
Location map （Scale: 1:25,000)



*** Description of "Type"**

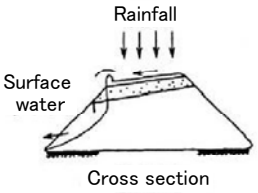
River bank erosion

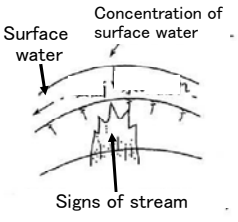
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	3	1

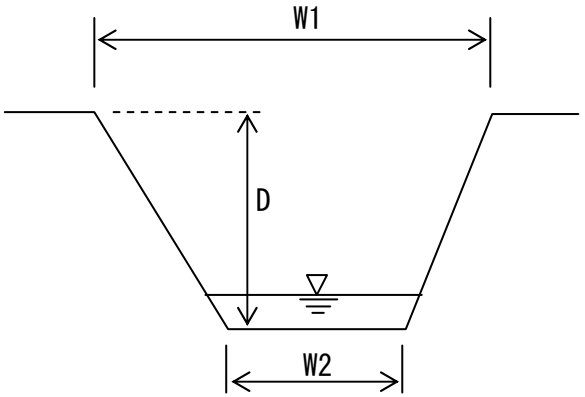
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	10.0 m
				W2 : Width of the riverbed	4.0 m
				D : Depth of the river	3.0 m
			Type	Right bank	(Soil or Natural ground) / Artificial structure
				Left bank	Soil or Natural ground (Artificial structure)
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				(Erosion)
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

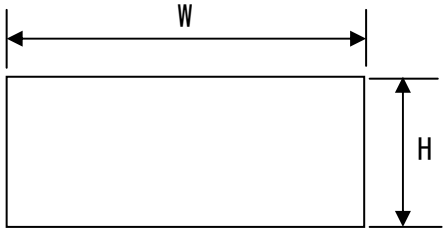
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	
		Some effect	✓
		High effect	



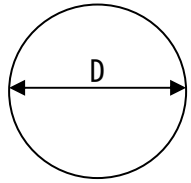
Structure of a river

[Description]

Bank erosion and flooding is common in the rainy season when the river water level rises.
There are more damage on the left side of the riverbank due to the strong collision of water.
However, past damage has been restored by constructing a retaining wall.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	3	1

Photo sheet

Date	*June 12, 2012*

Ph-1 Full view of the river

Ph-2 Full view from the upper side of the river

Ph-3 High water level in the rain season

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 3 1	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 12, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Stone masonry retaining wall (left bank)	1

[The Photo of Countermeasure]

Stone masonry retaining wall (left bank)

[Description]

The past damage is restored now.
It is not necessary to carry out the countermeasures.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

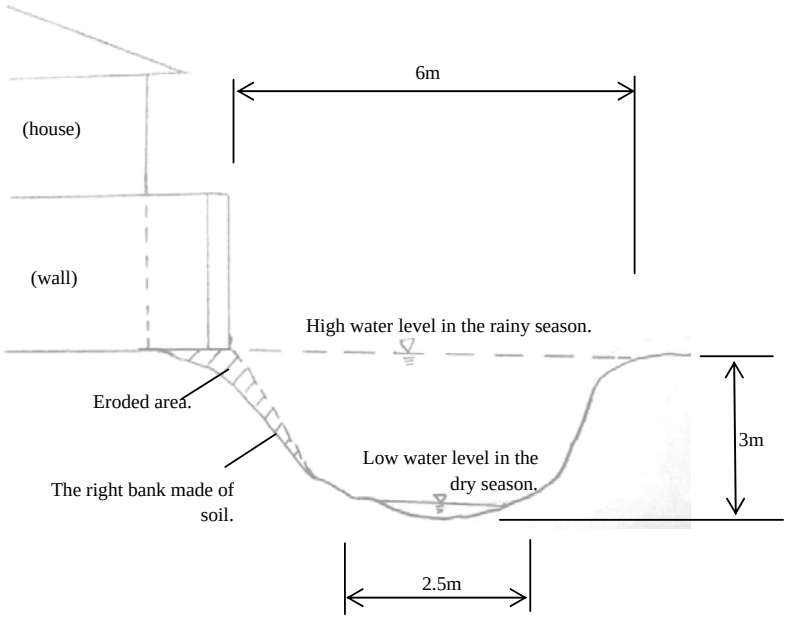
[Land use restrictions in hazard areas]

[Description]

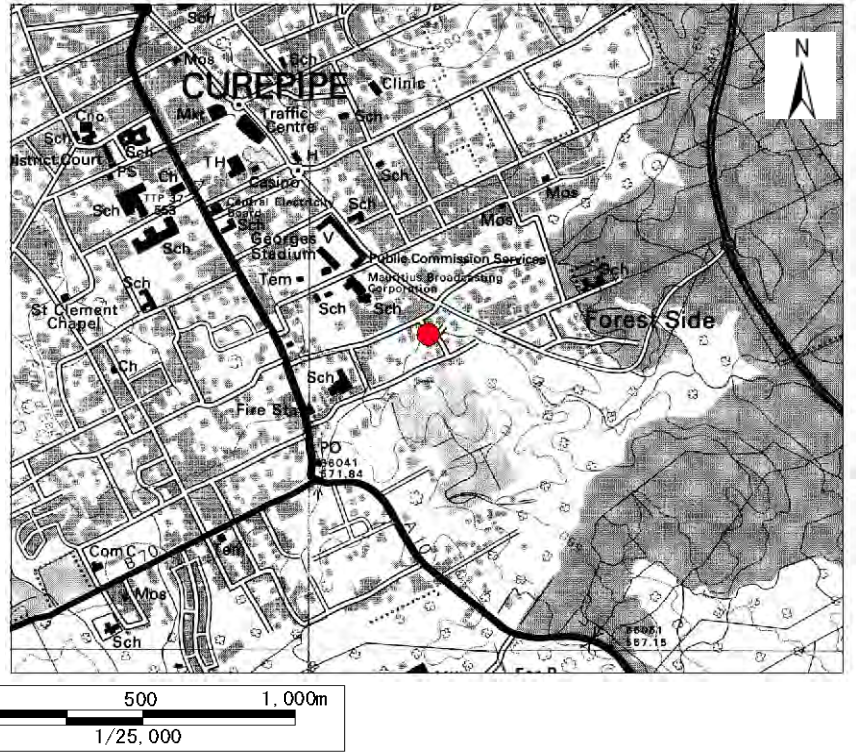
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 3 2	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 12, 2012
Address	Louis de Rochecouste (Riviere Seche)	Type*	Stream erosion	latitude	-20.323943	longitude	57.532568

Schematic sketch



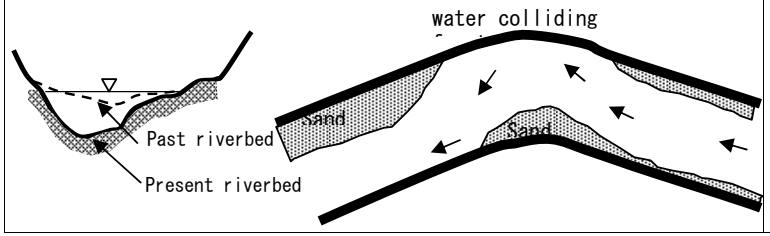
Location map （Scale: 1:25,000)



*** Description of "Type"**

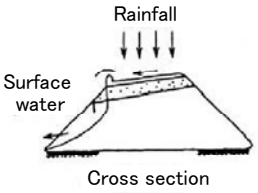
River bank erosion

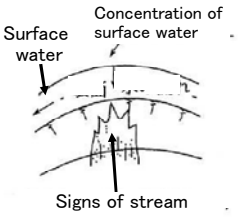
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	3	2

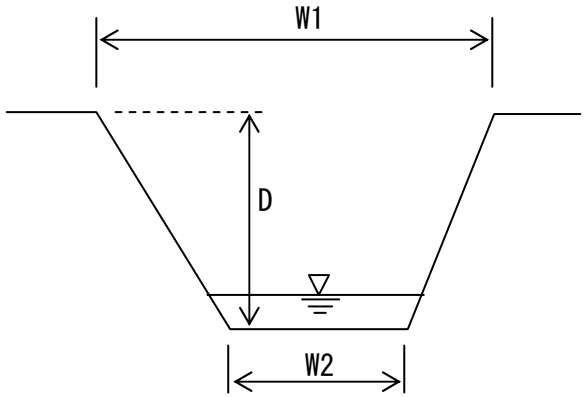
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	6.0 m
				W2 : Width of the riverbed	2.5 m
				D : Depth of the river	3.0 m
			Type	Right bank	Soil or Natural ground / Artificial structure
				Left bank	Soil or Natural ground / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

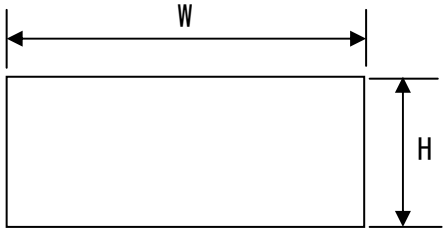
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



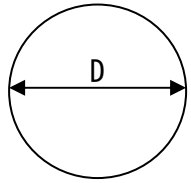
Structure of a river

[Description]

The bank erosion and flood are common in the rainy season. The base of the houses have been eroded and the retaining wall of the houses are inclined.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	3	2

Photo sheet

Date	*June 12, 2012*

Ph-1 Full view of the river

Ph-2 Eroded area

Ph-3 Eroded area (zoom up photo)

Ph-4 Eroded area
The eroded depth is 50cm

Ph-5 The inclined concrete block wall

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	3	2

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 12, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

None	None
None	[Description] It is necessary to carry out the countermeasures.

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

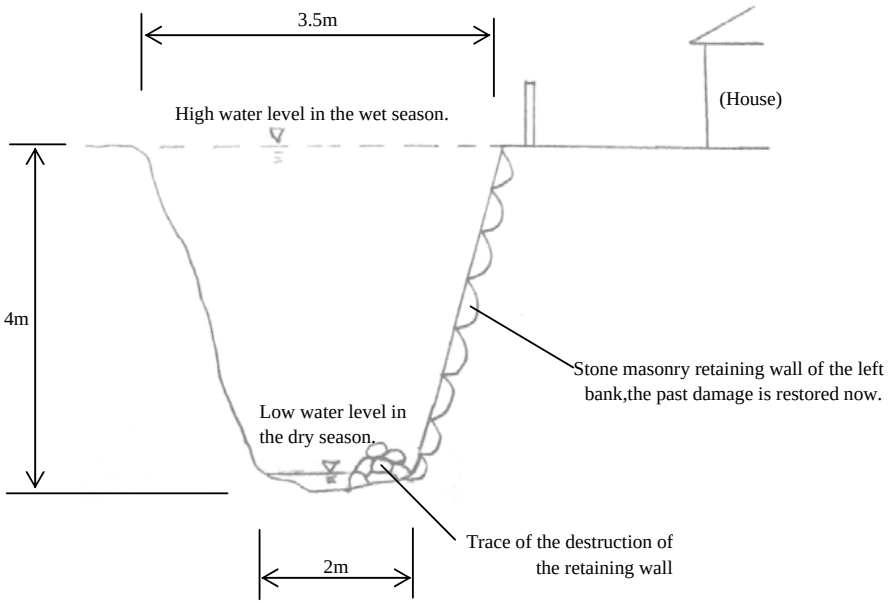
	[Resident's awareness and relocation] [Land use restrictions in hazard areas] [Description]

General Information Sheet (Other)

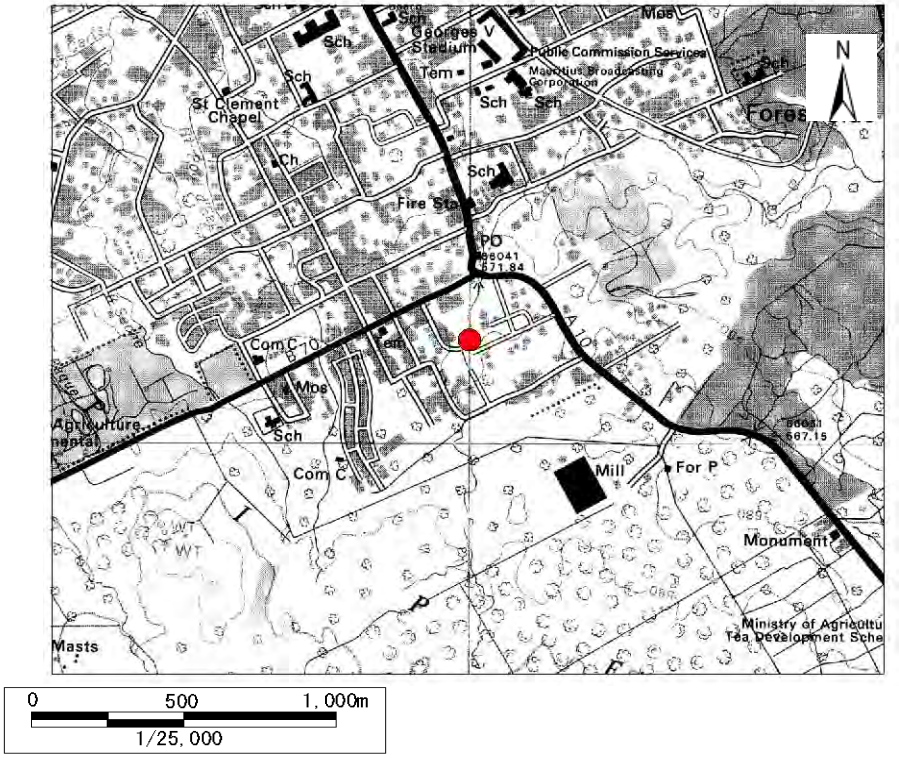
Management number	0 0 0 0 0 0 0 0 3 3	Reporter's name :	Tomoharu IWASAKI	Date of report :	June 12, 2012

Address	Piper Morcellement Piat	Type*	Stream erosion	latitude	-20.330301	longitude	57.529221

Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

River bank erosion

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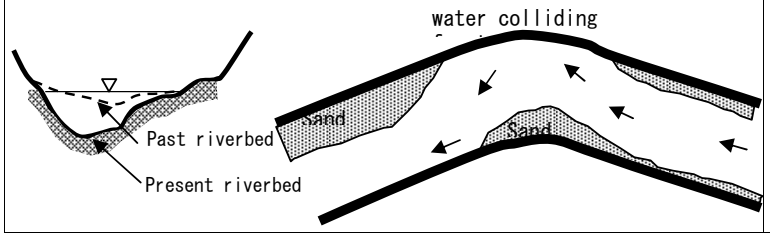
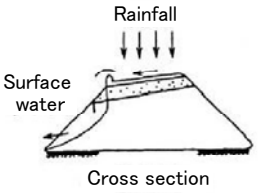
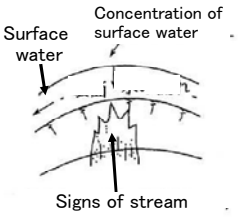


Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	3	3

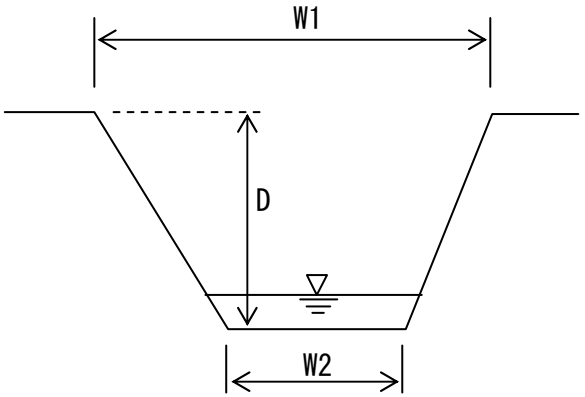
Evaluation sheet

Reporter's name:	*Tomoharu IWASAKI*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	3.5 m
				W2 : Width of the riverbed	2.0 m
				D : Depth of the river	4.0 m
			Type	Right bank	Soil or Natural ground / Artificial structure
				Left bank	Soil or Natural ground / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

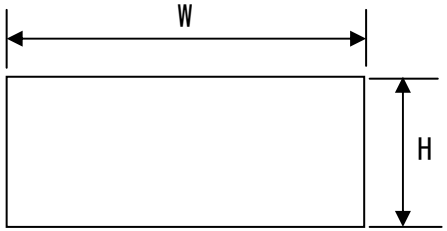
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		
	Effectiveness of Countermeasure	No effect	
		Some effect	✓
		High effect	



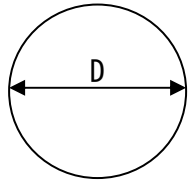
Structure of a river

[Description]

The bank erosion and flood are remarkable in the rainy season. However, the past damage has been restored by constructing the retaining wall.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	3	3

Photo sheet

Date	*June 12, 2012*

Ph-1 Full view of the river

The left river bank which a flow of the water crashes. It is eroded area. The past damage is restored now.

Ph-2 Trace of the destruction and the retaining wall

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	3	3

Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 12, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	Stone masonry retaining wall	1

[The Photo of Countermeasure]

Stone masonry retaining wall of left bank

[Description]

The past damage is restored now (retaining wall).

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

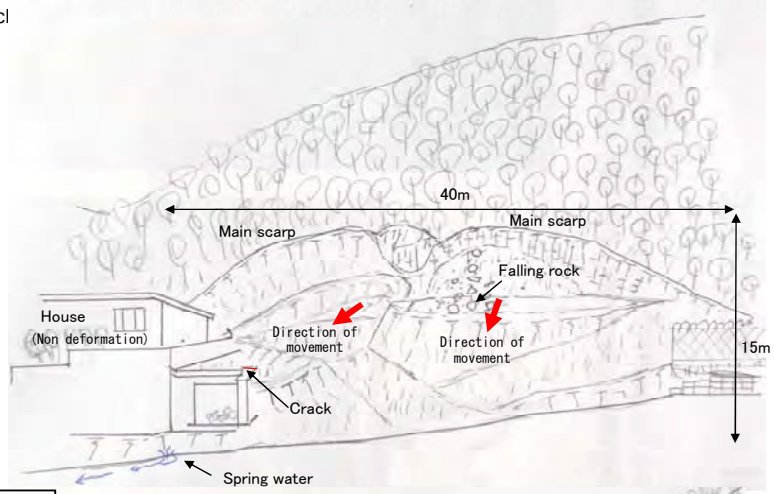
[Land use restrictions in hazard areas]

[Description]

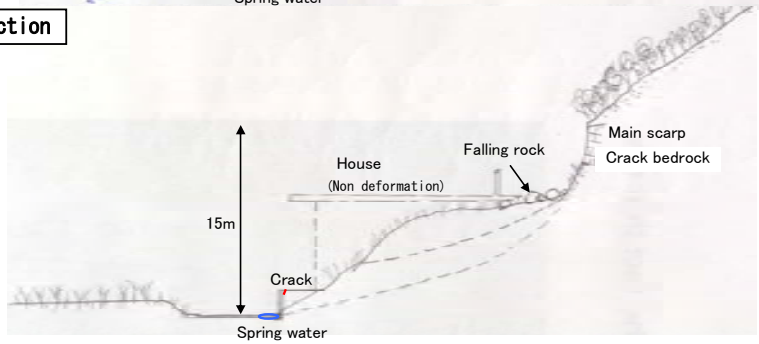
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 3 4			Reporter's name :	YoujiKASAHARA	Date of report :	June 26, 2012
Address	Candos Hill at LallBahadoor Shastri and Mahatma Gandhi Avenues	Type*	Landslide	latitude	-20.277536	longitude	57.482172

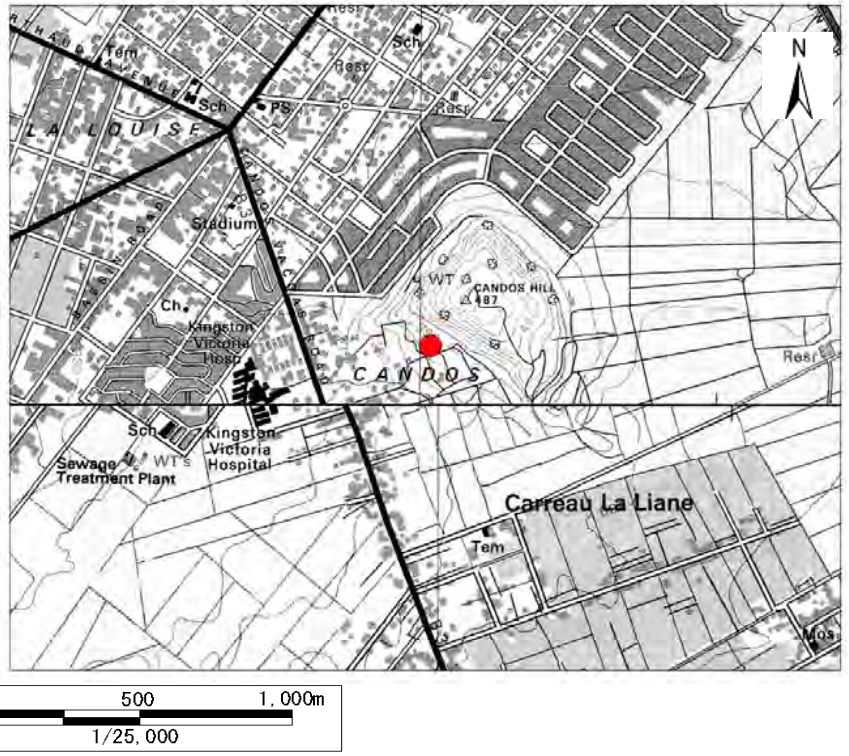
Schematic sketch



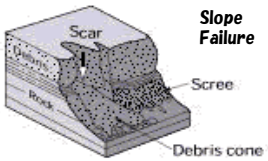
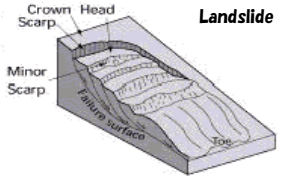
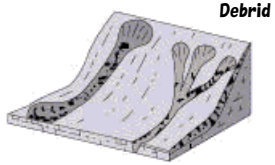
Cross section



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	3	4

Evaluation sheet

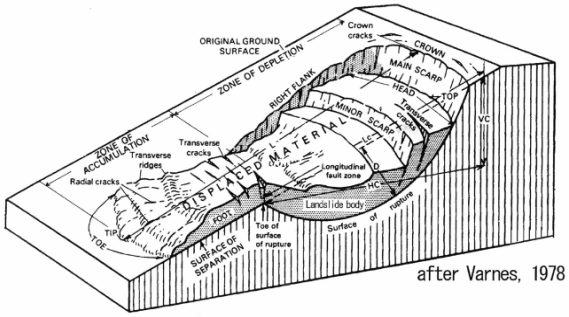
Reporter's name:	*YoujiKASAHARA*

[check Point]

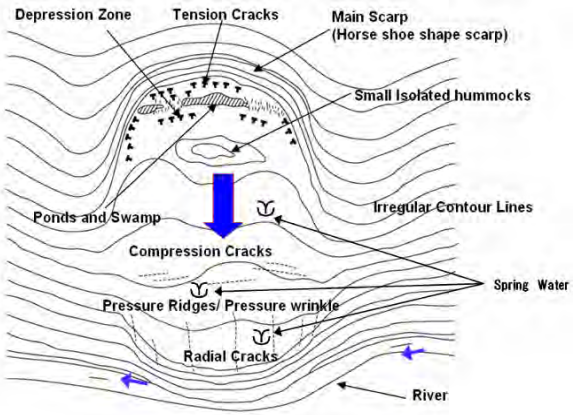
Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			✓
	Transverse Cracks (Tension or Compression)			
	Pond and Swamp			
	Spring Water			✓
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number : 1 concreat wall)	✓
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number:)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		
		slight		
		none		✓
Countermeasure	There is no Countermeasure			✓
	Effectiveness of Countermeasure	No effect		
		Some effect		
		High effect		

[Description]

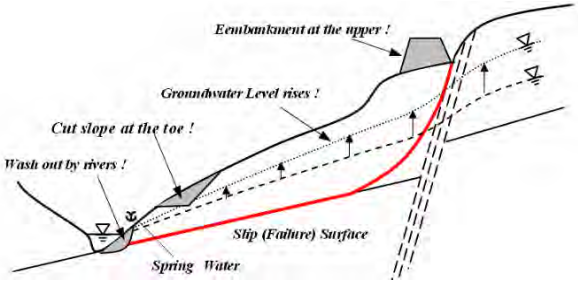
A clear landslide site was confirmed at the backyard of the house. The landslide topography and slope are clear while the spring water has been observed. The scale of this lanslide is small (40m x 35m) and no house on the lanslide area. Only slight crack has been confirmed on the retaining wall. It is not emergency, It is preferable to observe the crack of the retaining wall continuously in future.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	3	4

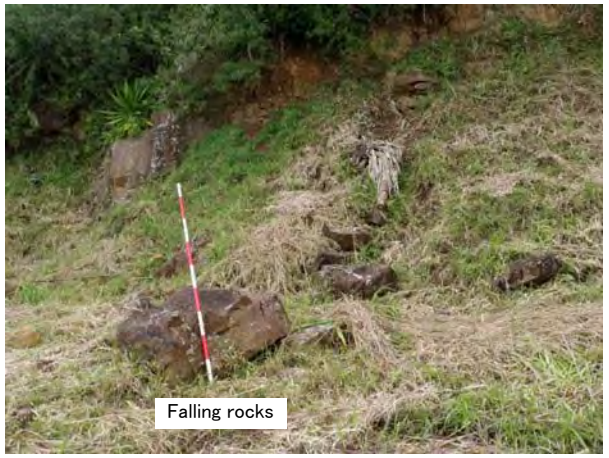
Photo sheet

Date	*June 26, 2012*

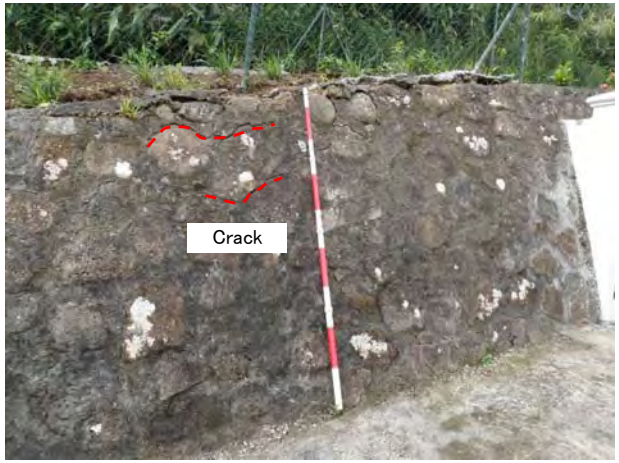
Ph-1 Full view

Ph-2 Collapse site

Main Scarp



Ph-3 Falling rock



Ph-4 Crack of retaining wall

Ph-5 Crack of concrete wall

Ph-6 Spring water

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 3 4	Reporter's name:	YoujiKASAHARA	Date of report :	June 26, 2012

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
None	

[The Photo of Countermeasure]

None	None
None	[Description] There is no countemeasure works. The damage of the retaining wall is also a little. However, the main scarp is clarity, old collapse mark. Immediate countermeasures are unnecessary now. It is preferable to observe the crack of the retaining wall continuously.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

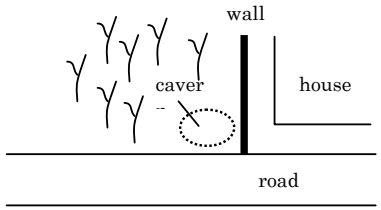
	[Resident's awareness and relocation] [Land use restrictions in hazard areas] [Description]

General Information Sheet (Other)

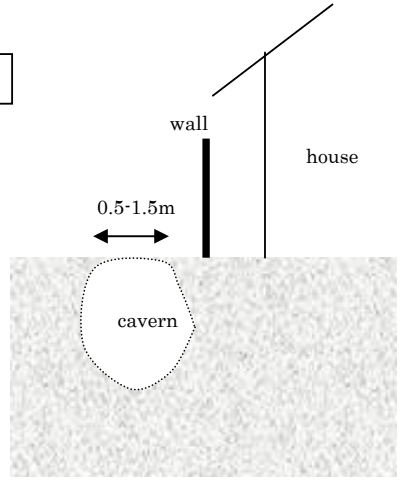
Management number	0 0 0 0 0 0 0 0 3 5		Reporter's name :	Ai Togami	Date of report :	July 5, 2012
Address	Cavernous Area at Mgr Leen Avenue and Bassin	Type*	Cavern	latitude	-20.277089	longitude 57.471856

Schematic sketch

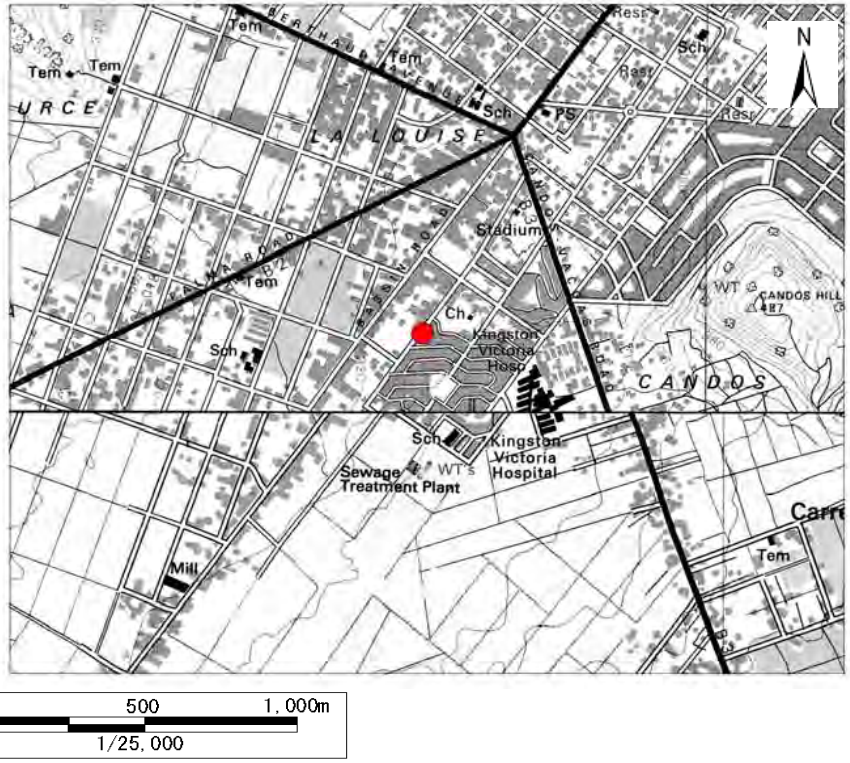
plan view



cross section

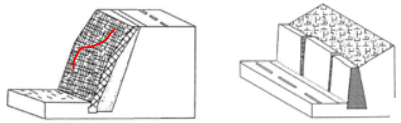


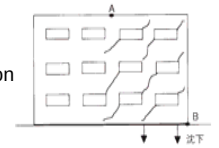
Location map （Scale: 1:25,000)

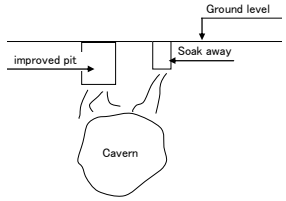


*** Description of "Type"**

Damage of wall	Damage of house	*cavern*
The disaster of the retaining wall doesn't have the sudden mutation like the rockfall etc. , and deformation does comparatively spending long time. The survey content is shown below. ・ Investigation of condition around retaining wall ・ Investigation concerning main body of retaining wall ・ Investigation concerning history	The crack that occurs on the wall in the house has the following causes. ・ Landslide movement ・ Lack of bearing capacity ・ Subsidence of foundation ground ・ Shoddy workmanship ・ Other It is preferable to search for length, width, and the direction of the crack, and to do the continuance observation.	The Cavern occur by the following causes. ・Infiltration of water from soak away ・Infiltration of water from improved pit ・other







Mangement number	0	0	0	0	0	0	0	0	3	5

Evaluation sheet

Reporter's name:	*Ai Togami*

[check Point]

Category		Record / check
Retaining wall	Type of the retaining wall	Concrete block / Concrete
		Stone masonry / Other
	H : Height of the retaining wall	m
	L : Length of the retaining wall	m
	D : Thickness of the retaining wall	m
	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
House	Type of the damage	Collapse / Inclination
		Hair crack / Open crack
		other
	Cause of damage	Landslide movement
		Lack of bearing capacity
		Subsidence of foundation ground
		Shoddy workmanship
		other / not clear
cavern	W : width of the cavern	0.5-1.5 m (conclusion)
	L : Length of the cavern	0.5-1.5 m (conclusion)
	D : Depth of the cavern	1.0m (conclusion)
	Situation above the cavern	improved pit / soak away / other
	Water	Spring water / Ground water

Category			Check✓
History	Existing record of damage on wall (documents or patrimony)	Obvious	
		slight	
		none	
	Existing record of damage on house (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	

[Description]

A cave was reported during the house construction but it was filled with concrete. There is no further danger at this site.

Management Number	0	0	0	0	0	0	0	0	3	5

Photo sheet

Date	*July 5, 2012*

Ph-1 Full view

Ph-2 Full view

Ph-3 filled cave

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	3	5

Reporter's name:	*Ai Togami*	Date of report :	*July 5, 2012*

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]

Non-structural Measure (Soft-Component)

Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

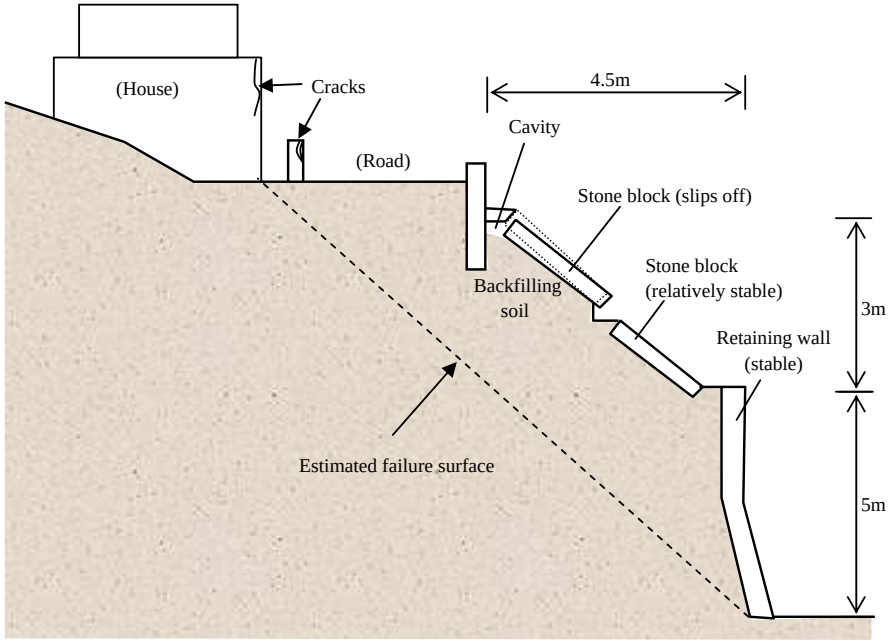
[Land use restrictions in hazard areas]

[Description]

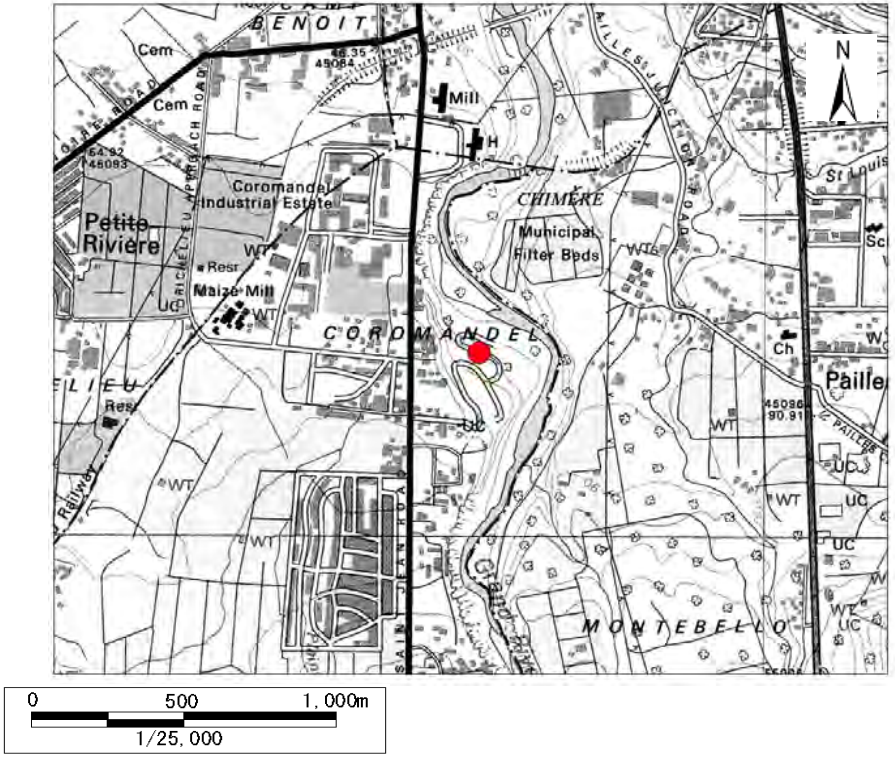
General Information Sheet (Slope)

Management number	0 0 0 0 0 0 0 0 3 6		Reporter's name :	Tomoharu IWASAKI	Date of report :	June 25, 2012
Address	Morcellement Hermitage, Coromandel	Type*	Landslide	latitude	-20.192628	longitude 57.472272

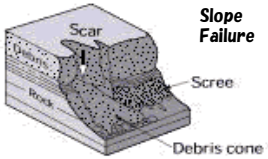
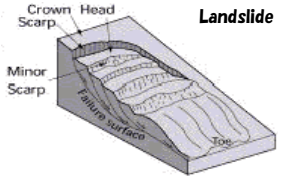
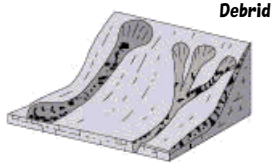
Schematic sketch



Location map （Scale: 1:25,000)



*** Description of "Type"**

Rock fall	Slope failure	Landslide	*Debris flow*
Rock Fall : Rock fall is a phenomenon where foliated rocks and gravel due to enlarged cracks in the bedrock or outcropped rocks start to fall down a slope.	Slope Failure : The slope failures mass detached from steep slope/cliff along surface with little or no shear displacement. Compared to landslides, the quick slope moves on a small-scale, the inclination angle of the slope failure is a relatively high angle (over 30 degrees).	A landslide is a phenomenon where the soil mass on failure surfaces deep in the ground gradually shifts downward, triggered by heavy rain or earthquake, river erosion, earthworks.Compared to slope failure, the gentler slope moves on a large, the inclination angle of the landslides slope is a relatively low angle (about 5-30 degrees).	A Debris flow is a phenomenon where soil and boulders are liquefied by surface water or groundwater and tend to flow downward rapidly through a mountain torrent.
			

Mangement number	0	0	0	0	0	0	0	0	3	6

Evaluation sheet

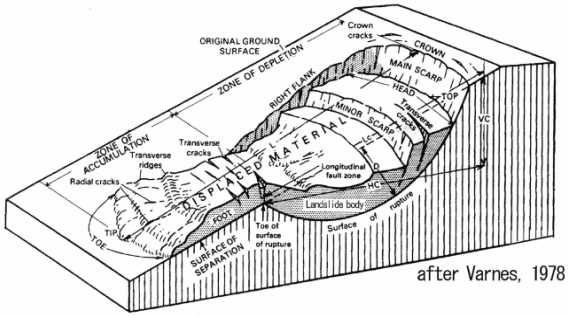
Reporter's name:	*Tomoharu IWASAKI*

[check Point]

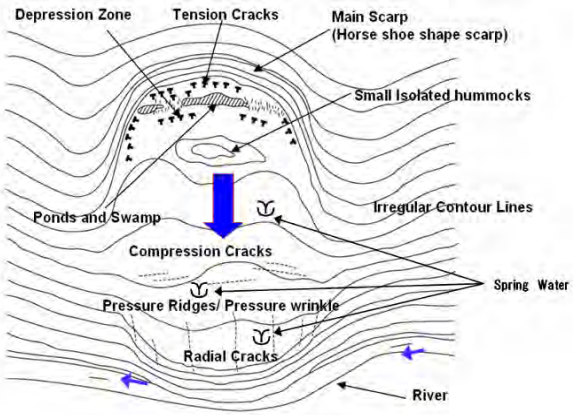
Category				Check✓
Phenomenon on the Site	Scarp (Main or Minor , Horse shoe shape)			
	Transverse Cracks (Tension or Compression)			✓
	Pond and Swamp			
	Spring Water			
	Topography with the Step			
	Eembankment at the upper			
	Cut Slope at the toe			✓
	Wash out by rivers			
	Damage on construction and houses	obvious	(number :)	
		Slight	(number : 1 houses)	✓
		None		
	Monitoring Equipment	There is it	(name: Extensometer , number: 3)	
		There is it	(name: , number:)	
		none		✓
History	Existing record of Landslide (documents or patrimony)	Obvious		✓
		slight		
		none		
Countermeasure	There is no Countermeasure			
	Effectiveness of Countermeasure	No effect		
		Some effect		✓
		High effect		

[Description]

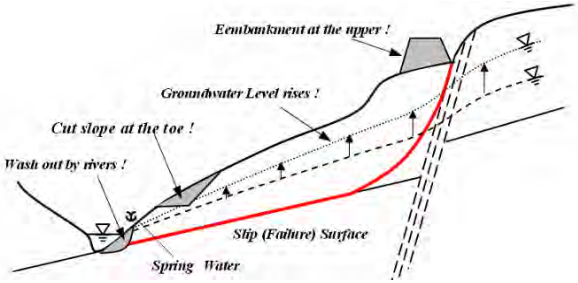
At this slope, slope failure occurred in 2010, and a road was destroyed. After a retaining wall was made as a countermeasure, large-scale slope failures have not been found. However, the stone blocks from on top of the retaining wall have fallen down. This is likely caused by the ground behind the retaining wall sinking due to lack of compaction of the backfilling soil.
It is necessary to investigate it in detail.



Structure of a landslide



Schematic diagram of landslide landforms



Schematic cross section of inducing factor and artificial cause

Management Number	0	0	0	0	0	0	0	0	3	6

Photo sheet

Date	*June 25, 2012*

Ph-1 Full view (Retaining wall)

Ph-2 Cracks on Stone block

Ph-3 Cracks on Stone block

Ph-4 Full view (upper end of retaining wall)

Ph-5 Damage on house

Ph-6 Cracks around the house

Survey on Structural/Non-structural Measures

Management number	0 0 0 0 0 0 0 0 3 6	Reporter's name:	*Tomoharu IWASAKI*	Date of report :	*June 25, 2012*

Structural Measures (Hard-Component)

Existing landslide countermeasures

The kinds of landslide countermeasure	Number
Retaining wall + Embankment	1

[The Photo of Countermeasure]

A slope failure occurred and destroyed the road in 2010. A retaining wall was constructed by the local consultant(GIBB) as countermeasure. There are cracks at the upper part of stone block but it is believe to be caused by submerged soil below the stone block. No deformation at the front part of retaining wall and the retaining wall remain stable at present. Further investigation is advisable.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment

The kinds of Landslide Monitoring / Spec	Number

Warning Threshold

Rainfall	
Movement/displacement	
communication means	
evacuation support	

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

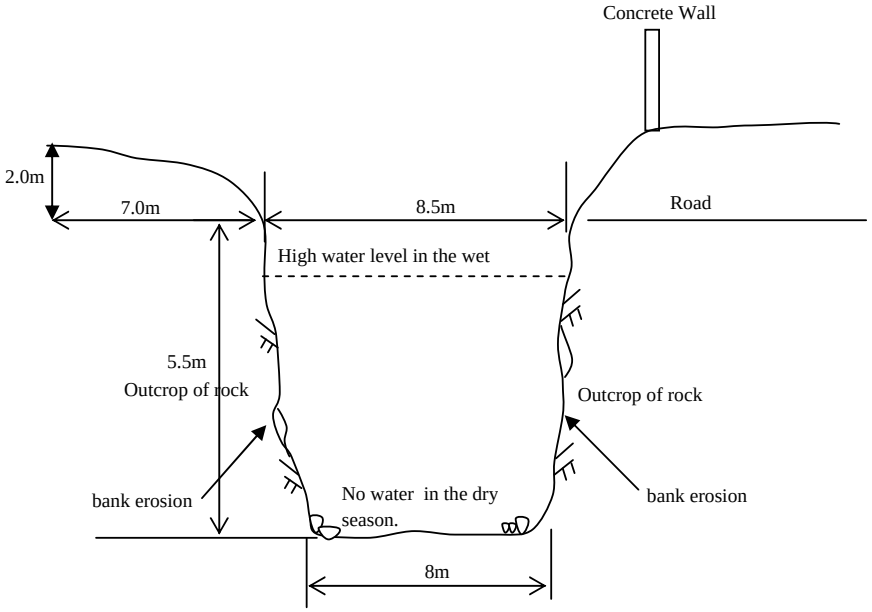
[Land use restrictions in hazard areas]

[Description]

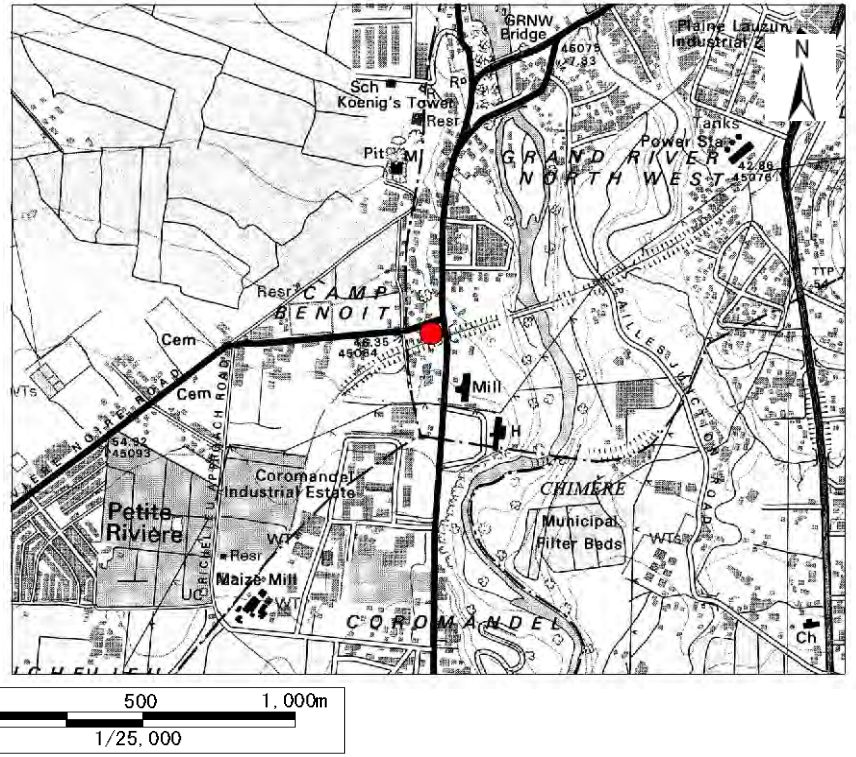
General Information Sheet (Other)

Management number	0 0 0 0 0 0 0 0 3 7			Reporter's name :	Youji KASAHARA	Date of report :	June 21, 2012
Address	Montee S, GRNW	Type*	Stream erosion	latitude	-20.330301	longitude	57.529221

Schematic sketch



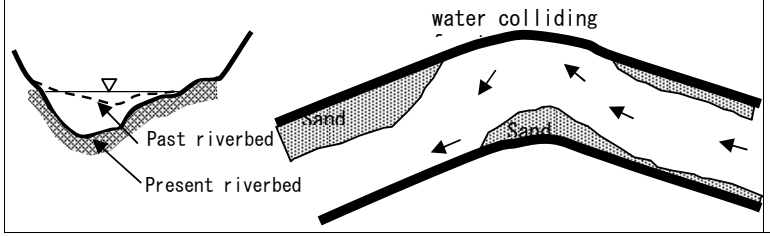
Location map （Scale: 1:25,000)



*** Description of "Type"**

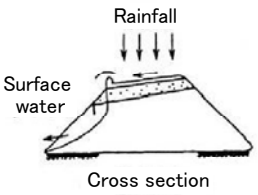
River bank erosion

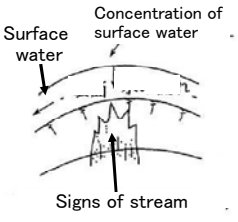
The Stream erosion is the phenomenon that the soil of the bank is removed by the flow of the river. It occurs in the part which a flow of the water crashes into mainly.Water might overflow when the amount of the stream increases.



Damage of Embankment

The collapse of the road embankment is often generated by a rainfall, infiltration of underground water, erosion by surface water, and a partial catchment. Therefore, it pays attention to the possibility of the catchment. The embankment material might be weak, and it cause by lack of soil compaction.





Mangement number	0	0	0	0	0	0	0	0	3	7

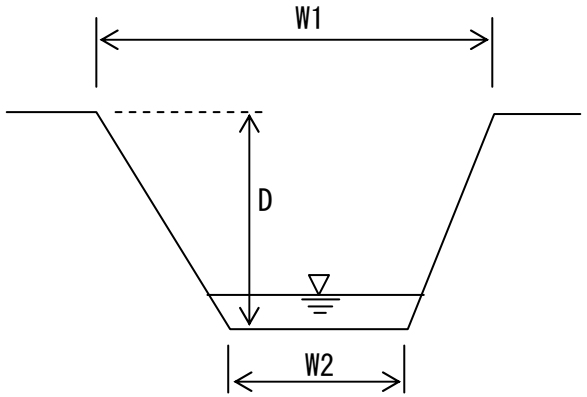
Evaluation sheet

Reporter's name:	*Youji KASAHARA*

[check Point]

Category					Record
Stream	Structure	Figure / size		W1 : Width of the river	8.5 m
				W2 : Width of the riverbed	8.0 m
				D : Depth of the river	5.5 m
			Type	Right bank	Soil or Natural ground / Artificial structure
				Left bank	Soil or Natural ground / Artificial structure
		Box culvert		W : Width	m
				H : Height	m
		Pipe culvert		D : Diameter	m
	Type of the damage				Erosion
					Overflow stream
					Other
Embankment	Type of the embankment				Embankment
					Cutting and embankment
	Type of the damage				Structural crack / Open crack
					Scour under the slope
					Erosion of the slope
					A lot of repair parts
					Other

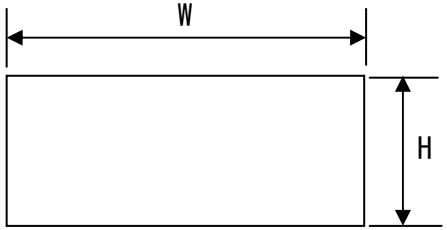
Category			Check✓
History	Existing record of Stream erosion or overflow stream (documents or patrimony)	Obvious	
		slight	
		none	✓
	Existing record of damage on embankment (documents or patrimony)	Obvious	
		Slight	
		None	
Countermeasure	There is no Countermeasure		✓
	Effectiveness of Countermeasure	No effect	
		Some effect	
		High effect	



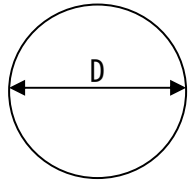
Structure of a river

[Description]

Weathered outcrops were detected on both sides of the bank. The erosion is remarkable in the rainy season.



Box culvert



Pipe culvert

Management Number	0	0	0	0	0	0	0	0	3	7

Photo sheet

Date	*June 21, 2012*

Ph-1 Full view of the bridge

Ph-2 Bank erosion around bridge abutment

Ph-3 river bed and side erosion

Ph-4 bank erosion

Survey on Structural/Non-structural Measures

Management number	0	0	0	0	0	0	0	0	3	7

Reporter's name:	Youji KASAHARA	Date of report :	June 21, 2012

Structural Measures (Hard-Component)

Existing countermeasures	The kinds of countermeasure	Number
	None	

[The Photo of Countermeasure]

[Description]
Weathered outcrops were detected at the bothsides of the bank.The erosion is remarkable in the rainy season.

Non-structural Measure (Soft-Component)

Landslide Monitoring Equipment	The kinds of Monitoring / Spec	Number

Warning Threshold		
	Rainfall	
	Movement/displacement	
communication means		
evacuation support		

[The Photo of Monitoring Equipment]

[Resident's awareness and relocation]

[Land use restrictions in hazard areas]

[Description]