APPENDIX 9

- Roadside Environmental Survey
 Results of Roadside Environmental Survey 9.3-2

APPENDIX 9.3-1

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Planidel-San Jose Section)

REDEATDSHE TEMESTATIFICATION OF A LESSERVIEW

(Type I)

Pang	alan (Nəme):		E	dad (Age):
Tirah	an (Address):			
	Civil Status: Hanapbuhay (Occupation	1):		-
1.	Uri ng Sasakyan (<i>Type of vehicle</i>)			
	☐ a. Tricycle		argo Truck (10 wh	eeler or greater)
	□ b. Passenger-type jeep		Freight Truck	
!	☐ c. All-Purpose Utility Vehicle (AUV)		Oil tanker	
	d. Private car/jeep		oa pa (Others)	
	☐ e. Bus			
2.	Rutang dinadaanan sa pagbiblyahe (Route serviced	d/frequ	ly used)	
	a. Sa loob lang ng bayan (Within the city/municipa			
	☐ b. Hanggang sa kabilang bayan (Inter-city/municip	ality)		
	C. Hanggang sa kabilang probinsiya (Inter-provinc	e)		
ļ	☐ d. Hanggang sa ibang rehiyon (Inter-region)			
	□ e. Iba pa (Others)			
3.	Pinanggalingan (Origin of Travel):			_
	Patutunguhan (Destination of Travel):			
1	llang oras ang blyahe: (Travel time):			
	a. Nung nakaraang sampung taon (Ten years ago			
	b. Nung nakaraang limang taon (Five years ago)			
	c. Sa kasalukuyan (At present)			
4.	Sa inyong palagay ano o anu-ano ang mga dahilan congestion):	ng tra	? (Perceived caus	se(s) of delay/traffic
5.	Bakit kayo dito dumaraan sa Pan-Philippine o Mah Maharlika Highway) a. Dito ang trabaho ko (Work is along this route) b. Dahil sa negosyo (Business transaction) c. Papasok sa eskuela (Going to school)			iya (Going to hometown)
	d. Papasok sa trabaho (Going to work place)			
1				

APPENDIX 9.3-1

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plaridel-San Jose Section)

ROADSIDE ENVIRONMENTAL SURVEY

(Type I)

Pang	alan (Name)		Edad (Age)	
Tirəh	an (Address):			
Sex:	Civil Status: Hanapbuhay (Occupation)			
1.	Uri ng Sasakyan (<i>Type of vehicle</i>)			
	☐ a. Tricycle		f Cargo Truck (10 wheeler or greater)	
	☐ b. Passenger-type jeep		g. Freight Truck	1
	☐ c. All-Purpose Utility Vehicle (AUV)		h. Oil tanker	
ĺ	☐ d. Private car/jeep		i. Iba pa (Others)	į
	🖸 e. Bus			!
2.	Rutang dinadaanan sa pagbibiyahe (Route serviced/f	requ	quently used)	
	a Sa loob lang ng bayan (Within the city/municipalit			
	b. Hanggang sa kabilang bayan (Inter-city/municipal)			
	☐ c. Hanggang sa kabilang probinsiya (Inter-province)			
	d. Hanggang sa ibang rehiyon (Inter-region)			
	e. Iba pa (Others)			
3.	Pinanggalingan (Origin of Travel):			
J.	Patutunguhan (Destination of Travel):			
	llang oras ang biyahe: (<i>Travel time</i>):			
	a. Nung nakaraang sampung taon (Ten years ago)			
	b. Nung nakaraang limang taon (Five years ago)			
	c. Sa kasalukuyan (At present)			
4.	Sa inyong palagay ano o anu-ano ang mga dahilan r congestion):	ıg tr	rapik? (Perceived cause(s) of delay/traffic	
	Bakit kayo dito dumaraan sa Pan-Philippine o Maha		a Highway? (Purpose for using Pan-Philippine	e/
5.	Maharlika Highway)			
	a. Dito ang trabaho ko (Work is along this route)	١	a. Uuwi sa prubinsiya (Going to hometown)	
	□ b. Dahil sa negosyo (Business transaction)	1	f. Magdedeliber (Delivery of goods)	
	☐ c Papasok sa eskuela (Going to school)		g. iba pa (Others)	
	☐ d. Papasok sa trabaho (Going to work place)			

pektuhan ba ng pagka avel time?) a. Oo (Yes)	-abala sa biyahe ang inyong kinikita? (: D b. Hindi (No)	is your income affected by this delay
g Oo, mga magkano?	(If Yes, by how much?)	
a. Nababawasan ng ku	lang sa 50% kaysa dati (Decreased but le	ess than 50%)
b. Naging kalahati na la	amang ng dati (Decreased about 50%)	
c. Mahigit sa kalahati a	ng ibinaba (Decreased more than 50%)	
		ka ba? (if a bypass will be
a. Oo (Yes)	□ b. Hindi (No)	
ng hindi, bakit? (If No,	why?)	
oor ka ba kung HINDI a	ing lahat ng uri ng sasakyan ay papaya	gang dumaan sa bypass? (<i>Are you in</i>
	A	,
kit? (<i>Why</i> ?)	D. Mildr (10)	
		<u> </u>
	n, may napansin ka bang pagbabago sa any changes in the environment?)	a iyong kapaligiran? (<i>In the past five</i>
		a iyong kapaligiran? (<i>In the past five</i>
ars, have you noticed a a. Meron (Yes)	any changes in the environment?)	a iyong kapaligiran? (<i>In the past five</i>
ars, have you noticed a a. Meron (Yes)	any changes in the environment?) D b Wala (No)	a iyong kapaligiran? (<i>In the past five</i>
ars, have you noticed a a. Meron (Yes)	any changes in the environment?) D b Wala (No)	a iyong kapaligiran? (<i>in the past five</i>
ars, have you noticed a a. Meron (Yes)	any changes in the environment?) D b Wala (No)	a iyong kapaligiran? (<i>In the past five</i>
ars, have you noticed a a. Meron (Yes)	any changes in the environment?) D b Wala (No)	a lyong kapaligiran? (In the past five
ars, have you noticed a a. Meron (Yes)	any changes in the environment?) D b Wala (No)	a iyong kapaligiran? (In the past five
	a. Oo (Yes) g Oo, mga magkano? a. Nababawasan ng ku b. Naging kalahati na la c. Mahigit sa kalahati a sa palagay ninyo ano ye delay in travel time): a. Oo (Yes) ng hindi, bakit? (If No, por ka ba kung HiNDI a or if NOT all types of y a. Oo (Yes)	a. Oo (Yes)

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plaridel-San Jose Section)

ROMDSTDEENWRONMENTAUSURVEY

(Type II)

Name	e: Occupation:	_
Comp	pany Name: Start of Operation (Year):	_
Area	of Business:	
1.	Type of product transported	
	☐ a. Rice ☐ f. Others	
	□ b. Corn	
	☐ c. Animal feeds	
	☐ d. Petroleum and other oil products	
	☐ e. Cement	
2.	Destination	
	a. Within the city/municipality	
	□ b. Inter-city/municipality	
	C. Inter-province	
	☐ d. Inter-region	
	e. Others	
3.	Travel time	
	a. Ten years ago	
	b. Five years ago	
	c. At present	
4.	Perceived cause(s) of delay/traffic congestion:	
5.	Is your income affected by this delay in travel time?	
	□ a. Yes □ b. No	
	If Yes, by how much?	
	a. Decreased but less than 50%	
	□ b. Decreased about 50%	
	C. Decreased more than 50%	
:		

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plaridet-San Jose Section)

ROADSIDE ENVIRONMENTAL SURVEY

(Type II)

Name	,		Occupation
Comp	any Name:		Start of Operation (Year):
Area d	of Business:		
		<u>.</u> .	
1.	Type of product transported		
	a. Rice		f. Others
	D b. Corn		
	C. Animal feeds		
	☐ d. Petroleum and other oil products		
	☐ e. Cement		
2.	Destination		
	a. Within the city/municipality		
	☐ b. Inter-city/municipality		
ļ	C c. Inter-province		
	d Inter-region		
	e Others		
3.	Travel time		
	a. Ten years ago		
	b. Five years ago	-	
	c. At present		
4.	Perceived cause(s) of defay/traffic congestion:		
•			
5.	Is your income affected by this delay in travel time?	?	
	☐ a. Yes ☐ b. No		
	If Yes, by how much?		
	a. Decreased but less than 50%		
	☐ b. Decreased about 50%		
	C. Decreased more than 50%		
1			

f a bypass will be cons	tructed to ease traffic congestion, are you in favor?	
☐ a. Yes f No, why?	□ b. No	
Are you in favor if NOT □ a. Yes Why?	all types of vehicle will be allowed to use the bypas □ b. No	s?
		
	ave you noticed any changes in the environment?	
n the past five years, h □ a. Yes If Yes, what are these?	ave you noticed any changes in the environment? ☐ b. No	
□ a. Yes		

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plaridel-San Jose Section)

ROADSINEIDAWIROAMENTALISURVEY

(Type III)

Pang	alan (Name):	Edad (Age):
Tirah	an (Address):	
1.	Bakit kayo dito dumaraan sa Pan-Philippine o Mahariika Highway? (Purpo Mahariika Highway)	
	a. Uuwi sa prubinsiya (Going to hometown)	
	☐ b. Dahil sa negosyo (Business transaction)	
	☐ c. Papasok sa eskuela (Going to school)	
	d. Papasok sa trabaho (Going to work place)	
	e. Iba pa (Others)	
2.	Uri ng Sinasakyan (<i>Type of vehicle used</i>)	
	☐ a. Tricycle	
	□ b. Passenger-type jeep	
	☐ c. All-Purpose Utility Vehicle (AUV)	
	☐ d. Private car/jeep	
	☐ e. Bus	
3.	Rutang dinadaanan sa pagbibiyahe (Route serviced/frequently used)	
	a. Sa loob lang ng bayan (Within the city/municipality)	
	□ b. Hanggang sa kabilang bayan (Inter-city/municipality)	
	☐ c. Hanggang sa kabilang probinsiya (Inter-province)	
	d. Hanggang sa ibang rehiyon (Inter-region)	
	e. Iba pa (Others)	
4.	llang oras ang biyahe: (Travel time):	
	a. Nung nakaraang sampung taon (Ten years ago)	
	b. Nung nakaraang limang taon (Five years ago)	
	c. Sa kasalukuyan (At present)	
5.	Sa inyong palagay ano o anu-ano ang mga dahilan ng trapik? (Percelved congestion):	cause(s) of delay/traffic
1		

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plaridel-San Jose Section)

ROADSIDE ENVIRONMENTAL SURVEY

(Type III)

Pang	galan (Name):	Edad (Age)
Tirah	nan (Address):	
1.	Bakit kayo dito dumaraan sa Pan-Philippine o Maharlika Highway? (Purpos Maharlika Highway)	
	a. Uuwi sa prubinsiya (Going to hometown)	
	□ b. Dahil sa negosyo (Business transaction)	
	☐ c. Papasok sa eskuela (Going to school)	
	d. Papasok sa trabaho (Going to work place)	
	e. Iba pa (Others)	
2.	Uri ng Sinasakyan (<i>Type of vehicle used</i>)	
	☐ a. Tricycle	
	☐ b. Passenger-type jeep	
	[] c. All-Purpose Utility Vehicle (AUV)	
	☐ d. Private car/jeep	
İ	☐ e. Bus	
3.	Rutang dinadaanan sa pagbibiyahe (Route serviced/frequently used)	
	a. Sa loob lang ng bayan (Within the city/municipality)	
	□ b. Hanggang sa kabilang bayan (Inter-city/municipality)	
	☐ c. Hanggang sa kabilang probinsiya (Inter-province)	
	☐ d. Hanggang sa ibang rehiyon (Inter-region)	
	e. Iba pa (Others)	-
4.	llang oras ang biyahe: (<i>Travel time</i>):	
	a. Nung nakaraang sampung taon (Ten years ago)	
	b. Nung nakaraang limang taon (Five years ago)	ngang papa saan
	c. Sa kasalukuyan (At present)	
5.	Sa inyong palagay ano o anu-ano ang mga dahilan ng trapik? (Perceived congestion):	cause(s) of delay/traffic

		
		
the first since the second of the second sec		
		
Kung gagawa ng bypass pa	nra malunasan ang trapik, sang-ayon ka ba? (if a byp congestion, are you in favor?)	
a. Oo (Yes)	□ b. Hindi (<i>No</i>)	
Kung hindi, bakit? (If No, w	hy?)	
Pabor ka ba kung HINDI an		
Pabor ka ba kung HINDI an	g lahat ng uri ng sasakyan ay papayagang dumaan s	
Pabor ka ba kung HINDI an favor if NOT all types of ver	g lahat ng uri ng sasakyan ay papayagang dumaan s hicle will be allowed to use the bypass?)	
Pabor ka ba kung HINDI an favor if NOT all types of vei	g lahat ng uri ng sasakyan ay papayagang dumaan s hicle will be allowed to use the bypass?)	
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?)	g lahat ng uri ng sasakyan ay papayagang dumaan s hIcle will be allowed to use the bypass?) D b. Hindi (No)	a bypass? (Are
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?) Sa nakaraang limang taon,	g lahat ng uri ng sasakyan ay papayagang dumaan s hIcle will be allowed to use the bypass?) D b. Hindi (No)	a bypass? (Are
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?) Sa nakaraang limang taon,	g lahat ng uri ng sasakyan ay papayagang dumaan s hIcle will be allowed to use the bypass?) b. Hindi (No) may napansin ka bang pagbabago sa iyong kapaligity changes in the environment?)	a bypass? (Are
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?) Sa nakaraang limang taon, years, have you noticed an a. Meron (Yes)	g lahat ng uri ng sasakyan ay papayagang dumaan s hicle will be allowed to use the bypass?) b. Hindi (No) may napansin ka bang pagbabago sa iyong kapaliging changes in the environment?)	a bypass? (Are
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?) Sa nakaraang limang taon, years, have you noticed an a. Meron (Yes)	g lahat ng uri ng sasakyan ay papayagang dumaan s nlcie will be allowed to use the bypass?) b. Hindi (No) may napansin ka bang pagbabago sa iyong kapaliging changes in the environment?) b.Wala (No)	a bypass? (Are
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?) Sa nakaraang limang taon, years, have you noticed an a. Meron (Yes)	g lahat ng uri ng sasakyan ay papayagang dumaan s nlcie will be allowed to use the bypass?) b. Hindi (No) may napansin ka bang pagbabago sa iyong kapaliging changes in the environment?) b.Wala (No)	a bypass? (Are
Pabor ka ba kung HINDI an favor if NOT all types of ver a. Oo (Yes) Bakit? (Why?) Sa nakaraang limang taon, years, have you noticed an a. Meron (Yes)	g lahat ng uri ng sasakyan ay papayagang dumaan s nlcie will be allowed to use the bypass?) b. Hindi (No) may napansin ka bang pagbabago sa iyong kapaliging changes in the environment?) b.Wala (No)	a bypass? (Are

 $A_{ij} = \sum_{j=1}^{k} \left(-\frac{1}{2} \sum_{j=1}^{k} \left(-\frac{1$

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plandel-San Jose Section)

ROADSHDEJERWIRONMENERIESERWEY

(Type IV)

ny Name:	Start of Operation (Year):
s:	
Type of establishment	
☐ a. Gasoline station	☐ f. Others
☐ b. Food/Restaurant 8usine	ss <u> </u>
C. Trading	
d. Mall/commercial center	
e. Convenience Store	
f. Car Repair/Services	
Perceived cause(s) of delay/ti	raffic congestion:
	elav in travel time
Proposed solution to solve d	elay in travel time
Proposed solution to solve d	elay in travel time
Proposed solution to solve de	elay in travel time elay in travel time elay in travel time
Proposed solution to solve deliberation to s	elay in travel time elay in travel time elay in travel time
Proposed solution to solve deliberation to s	elay in travel time elay in travel time elay in travel time
Proposed solution to solve deliberation to s	elay in travel time elay in travel time elay in travel time
Proposed solution to solve deliberation of the solution of the	elay in travel time elay in travel time elay in travel time
Proposed solution to solve deliberation of the solution of the	elay in travel time ed to ease traffic congestion, are you in favor? D b. No
Proposed solution to solve de lif a bypass will be constructed a. Yes lif No, why? Are you in favor if NOT all ty	elay in travel time ed to ease traffic congestion, are you in favor? D b. No pes of vehicle will be allowed to use the bypass?

Feasibility Study on Upgrading Inter-Urban Highway System Along Pan-Philippine Highway (Sta Rita, Plaridel-San Jose Section)

ROADSIDE ENVIRONMENTAL SURVEY

(Type IV)

Type of establishment a. Gasoline station b. Food/Restaurant Business c. Trading d. Mall/commercial ceater e. Convenience Store f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? Are you in favor if NOT all types of vehicic will be allowed to use the bypass? a. Yes b. No Why?	e:		Occupation
Type of establishment a. Gasoline station f. Others b. Food/Restaurant Business c. Trading d. Mall/commercial center e. Convenience Store f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time	ра	ny Name:	Start of Operation (Year)
Type of establishment a. Gasoline station b. Food/Restaurant Business c. Trading d. Mall/commercial center e. Convenience Store f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes b. No If No, why? Are you in favor if NOT all types of vehicle will be allowed to use the bypass? a. Yes b. No	es	s:	
□ a Gasoline station □ f. Others □ b. Food/Restaurant Business □ c. Trading □ d. Mall/commercial center □ e. Convenience Store □ f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: □ Proposed solution to solve delay in travel time □ f. a bypass will be constructed to ease traffic congestion, are you in favor? □ a. Yes □ b. No If No, why? □ Are you in favor if NOT all types of vehicle will be allowed to use the bypass? □ a. Yes □ b. No			
b. Food/Restaurant Business c. Trading d. Mall/commercial center e. Convenience Store f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes b. No If No, why? Are you in favor if NOT all types of vehicle will be allowed to use the bypass? b. No		• •	[7] f Others
□ c. Trading □ d. Mall/commercial center □ e Convenience Store □ f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? □ a. Yes □ b. No If No, why? Are you in favor if NOT all types of vehicle will be allowed to use the bypass? □ a. Yes □ b. No	-		
□ d. Mall/commercial center □ e Convenience Store □ f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: □ Proposed solution to solve delay in travel time □ If a bypass will be constructed to ease traffic congestion, are you in favor? □ a. Yes □ b. No If No, why? □ Are you in favor if NOT all types of vehicle will be allowed to use the bypass? □ a. Yes □ b. No			
☐ e. Convenience Store ☐ f. Car Repair/Services Perceived cause(s) of delay/traffic congestion: ☐ Proposed solution to solve delay in travel time ☐ If a bypass will be constructed to ease traffic congestion, are you in favor? ☐ a. Yes ☐ b. No If No, why? ☐ Are you in favor if NOT all types of vehicle will be allowed to use the bypass? ☐ a. Yes ☐ b. No		-	
Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a Yes			
Perceived cause(s) of delay/traffic congestion: Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes b. No If No, why? Are you in favor if NOT all types of vehicle will be allowed to use the bypass? a. Yes b. No	,		
Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes		·	
Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes			
Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes			
Proposed solution to solve delay in travel time If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes			
If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes			
If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes		Proposed solution to solve delay	y in travel time
If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes			
If a bypass will be constructed to ease traffic congestion, are you in favor? a. Yes			
☐ a. Yes ☐ b. No If No, why? Are you in favor if NOT all types of vehicle will be allowed to use the bypass? ☐ a. Yes ☐ b. No			
If No, why? Are you in favor if NOT all types of vehicle will be allowed to use the bypass? a. Yes b. No		If a bypass will be constructed to	o ease traffic congestion, are you in favor?
Are you in favor if NOT all types of vehicle will be allowed to use the bypass? □ a. Yes □ b. No			
☐ a. Yes ☐ b. No		If No, why?	
□ a. Yes □ b. No			
□ a. Yes □ b. No			
□ a. Yes □ b. No			
☐ a. Yes ☐ b. No		Are you in favor if NOT all types	of vehicle will be allowed to use the bypass?
<u> </u>			
		Telly:	

APPENDIX 9.3-2 RESULT OF ROADSIDE ENVIRONMENTAL SURVEY

Observed Amblent Air Quality Along Sta. Rita, Plaridel-San Jose Section of the Pan-Phil Highway

Station	Date &Time	Ave. Time	GLC Concentration in µg/Ncm				
			Sampling Results		C DENR Standards		
			SO₂	NO ₂	TSP	SON NON TSP	
1- Plaridel Intersection to Bustos	1000-1100 05 Jan. 1999	1 hr	84.928	56.200	263,346	540 L 300 300	
2 – Brgy, Tambo, San Leonardo NE	1340-1440 05 Jan. 1999	1 hr	22.748	16.995	41.339	**************************************	
3 - Cabanatuan City Intersection to Palayan City	1625,05 Jan. 99 1625,06 Jan. 99	24 hrs	89.446	72.702	145.639		
4 – Purok 6, Brgy. San Isidro, Cabanatuan City	1010-1110 06 Jan. 1999	1 hr	20.221	7.554	81.825		

. Observed Noise Levels Along Sta. Rita, Plaride?-San Jose Section of the Pan-Phil Highway

_	I		TO TOUR OF CHE P	-it the regitary		
Station	Noise Levels in dB (A)					
	Morning (0500-0900HR)	Daytime (0900-1800HR)	Evening (1800-2200HR)	Nighttime (2200-0500HR)		
DENR Standard for each Residential Freds	- T					
DENR Standard for Commercial Areas Areas						
1 - Plaridel Intersection to Bustos	76-78	74-76	88-90	74-76		
2 - Brgy. Tambo, San Leonardo NE	70-72	70-72	76-78	72-74		
3 - Cabanatuan City Intersection to Palayan City	70-72	78-80	72-74	70-72		
4 - Purok 6, Brgy. San Isidro, Cabanatuan City	68-70	62-64	68-70	60-62		

APPENDIX 9.3-2 RESULT OF ROADSIDE ENVIRONMENTAL SURVEY

Observed Ambient Air Quality Along Sta. Rita, Plaridel-San Jose Section of the Pan-Phil Highway

Station	Date &Time	Ave. Time	GLC Concentration in μg/Ncm					
			s	ampling Res	ults) DÉN	IR Stand	ards
			\$O ₂	NO ₂	TSP	\$02	NO₂	T\$P
1- Plandel Intersection to Bustos	1000-1100 05 Jan 1999	1 hr	84.928	56.200	263.346	340	260	300
2 – Brgy Tambo, San Leonardo NE	1340-1440 05 Jan. 1999	1 hr	22.748	16.995	41.339	340 5	260	300
3 – Cabanatuan City Intersection to Parayan City	1625,05 Jan. 99 1625,06 Jan. 99	24 hrs	89.446	72.702	145.639	7/18 0	150?	230
4 – Purok 6, Brgy, San Isidro, Cabanatuan City	1010-1110 06 Jan 1999	1 hr	20 221	7.554	81.825	340	260	300

Observed Noise Levels Along Sta. Rita, Plaridel-San Jose Section of the Pan-Phil Highway

Station	Noise Levels in d8 (A)				
	Morning (0500-0900HR)	Daytime (0900-1800HR)	Evening (1800-2200HR)	Nighttime (2200-0500HR)	
DENR Standard for Residential Areas	50	55	50	v/12.45/	
DENR Standard for Commercial Areas	,60	65	60	55	
1 - Plaridel Intersection to Bustos	76-78	74-76	88-90	74-76	
2 - Brgy. Tambo, San Leonardo NE	70-72	70-72	76-78	72-74	
3 - Cabanatuan City Intersection to Palayan City	70-72	78-80	72-74	70-72	
4 - Purek 6, Brgy, San Isidro. Cabanatuan City	68-70	62-64	68-70	60-62	

List of Tree Species Observed Along the Pan-Phil Highway (Sta. Rita, Plaridel-San Jose Section)

Common Name	Scientific Name	Family
cacla (rain tree)	Samanea saman (Jacq.) Merr.	Leguminosae
Igoho	Casuarina equisetifolia L.	Casuarinaceae
Mibangbang	Bauhinia monandra Kurz.	Leguminosae
Banaba	Lagerstroema speciosa (L.) Pers.	Lyrthaceae
Bayabas (guava)	Psidium guajava L.	Муласеае
Bougainvillea	Bougainvillea spectabilis Willd.	Nyctaginaceae
Bunga de china	Veitchia merrillii (Becc.) H.E. Moore.	Palmae
Buri	Corypha efata Roxb.	Palmae
Calmito (star-apple)	Chrysophyllum cainito L.	Sapotaceae
Calachuche red	Plumeria rubra L. forma rubra	Apocynaceae
Calachuchi white	Plumeria oblusa L.	Apocynaceae
Camachile	Pithecelloblum dulce (Roxb.) Benth.	Leguminosae
Campanila	Theyetia peruviana (Pers.) K. Schum.	Аросупасеае
Cauayan	Bambusa & Gigantochloa spp.	Graminae
Common mahogany	Swietenia mahogani (L.) Jacq.	Meliaceae
Dapdap	Erythrina variegata L. var. orientalis (L.)Мет.	Leguminosae
Datiles	Muntingia calabura L.	Titiaceaea
Dita	Alstonia scholaris (L.) R.Br.	Apocynaceae
Duhat	Syzygium cumini (L.) Skeels	Myrtaceae
Eucalyptus (blue gum tree)	Eucalyptus terecticornis Sm.	Myrtaceae
Fire tree	Delonix regia (Bojer.) Raf.	Leguminosae
Fortune plant	Dracaena fragans (L.) Ker-Gawl.	Agavaceae
Melina/yemane	Gmelina arborea Roxb.	Verbenaceae
Ilang-ilang	Cananga odorata (Lamk.) King	Annonaceae
Indian rubber tree	Ficus elastica Roxb. Ex Homem	Moraceae
Indian tree	Polyalthia longifolia Benth. & Hook. F.	Annonaceae
lpil-ipil	Leucaena leucocephala (lamk.) de Witt.	
Japanese acacia	Acacia auriculiformis A. Cunn. Ex Benth.	
Kamoteng-kahoy (cassava)	Manihot esculenta Crantz	Euphorbiaceae
Kapok	Ceiba pentandra (l.) Gaertn.	Bombacaceae
Langka (jack fruit)	Artocarpus heterophyllus Lamk.	Moraceae
Large-leaved mahogany	Swietenia machrophylla King	Meliaceae
Mabolo	Diospyros philippinensis Rolle	Ebenaceae
Масора	Syzygium samarangense (Bl.) Merr & Perry	
Malakamias	Ailanthus triphysa (Dennst.) Alst.	Simaroubaceae
Maluko	Pisonia alba Span.	Nymphaeaceae

List of Tree Species Observed Along the Pan-Phil Highway (Sta. Rita, Plaridel-San Jose Section) Continued...

Common Name	Scientific Name	Family
Malunggay	Moringa oleifera Lam.	Moraceae
Mangium	Acacia mangium Willd.	Leguminosae
Mango	Magifera Indica L.	Anacardiaceae
Narra	Pterocarpus Indicus subsp. Indicus Willd.	······································
Neem tree	Azidarachta indica A. Juss.	Meliaceae
Niyog (coconut)	Cocos nucifera L.	Palmae
Papaya	Carica papaya L.	Caricaceae
Saging (banana)	Musa sp. Andr.	Musaceae
Sampalok (tamarind)	Tamarindus indica L.	Leguminosae
Santol	Sandoricum koeljape (Burm.f.) Merr.	Meliaceae
Talisai	Terminalia catappa L.	Combretaceae
Teak tree	Tectona grandis L.f.	Verbenaceae
Tiesa	Pouteria campechiana (HBK) Baehni	Sapotaceae

List of Historical Markers and Protected Areas in Bulacan and Nueva Ecija

il investigation and the second	
Name	Location
Building and Structure	
Casa Real	Maiolos, Bulacan
Church and Other Places of Piety	
Barasoain Church	Malolos, Bulacan
Church of Hagonoy	Hagonoy, Bulacan
Simbahan ng Hagonoy	Hagonoy, Bulacan
Simbahan ng Marilao	Marilao, Bulacan
Simbahan ng Sta. Maria	Sta. Maria, Bulacan
Church of Meycauayan	Meycauayan, Bulacan
Simbahan ng Obando	Obando, Bulacan
Church of Pandi	Pandi, Bulacan
Simbahan ng Quingua	Plaridei, Buiacan
Simbahan ng Sta. Maria	Sta. Maria, Bulacan
Church of Peñaranda	Peñaranda, Nueva Ecija

List of Tree Species Observed Along the Pan-Phil Highway (Sta. Rita, Plaridel-San Jose Section) Continued...

Common Name	Scientific Name	Family
Malunggay	Moringa oleifera Lam.	Moraceae
Mangium	Acacia mangium Willd.	Leguminosae
Mango	Magifera indica L	Anacardiaceae
Narra	Pterocarpus indicus subsp. Indicus Willd	Leguminosae
Noem tree	Azidarachta indica A. Juss	Meliaceae
Niyog (coconut)	Cocos nucifera L.	Palmae
Papaya	Carica papaya L	Caricaceae
Saging (banana)	Musa sp. Andr.	Musaceae
Sampalok (tamarind)	Tamarindus indica L.	Leguminosae
Santol	Sandoricum koetjape (Burm.t.) Merr.	Meliaceae
Tafisai	Terminalia catappa L.	Combretaceae
Teak tree	Tectona grandis L.f.	Verbenaceae
Tiesa	Pauteria campechiana (HBK) Baehni	Sapolaceae

List of Historical Markers and Protected Areas in Bulacan and Nueva Ecija

Historical Markers Name	Location	
Building and Structure		
Casa Real	Malolos, Bulacan	
Church and Other Places of Piety		
Barasoain Church	Maiolos, Bulacan	
Church of Hagonoy	Hagonoy, Bulacan	
Simbahan ng Hagonoy	Hagonoy, Bulacan	
Simbahan ng Marilao	Marilao, Bulacan	
Simbahan ng Stal Maria	Sta. Maria, Bulaçan	
Church of Meycauayan	Meycauayan, Bulacan	
Simbahan ng Obando	Obando, Bulacan	
Church of Pandi	Pandi, Butacan	
Simbahan ng Quingua	Plaridel, Bulacan	
Simbahan ng Sta. Maria	Sta. María, Bulacan	
Church of Peñaranda	Peñaranda, Nueva Ecija	

List of Historical Markers and Protected Areas in Bulacan and Nueva Ecija (Continued...)

Name	Location
Ailitary Site	
Bulacan Military Area	Bustos, Bufacan
Paliparang Maniquis, P. A. A. C.	Cabanatuan City, Nueva Ecija
Monuments and National Historical Landmarks	
Church of Barasoain	Malolos, Bulacan
Personages	
licanor Abelardo at Sta. Ana (1893-1934)	San Miguel, Bulacan
Felipa Buencamino	San Miguel, Bulacan
lose Corazon de Jesus	Sta. Maria, Bulacan
Francisco Santiago	Sta. Maria, Bulacan
Heneral Isidoro Torres	Malolos, Bulacan
Dr. Maximo Viola	San Miguel, Bulacan
Joaquin Gonzales	Baliuag, Bulacan
Trinklad Tecson	San Miguel, Bulacan
Dr. Pio Valenzuela	Valenzuela, Bulacan
Jose P. Bantug	San Isldro, Nueva Ecija
Lazaro Francisco	Cabanatuan City, Nueva Ecija
Heneral Manuel S. Tinio	Aliaga, Nueva Ecija
Sites	
Pook na Kinalatayuan ng Bahay Paaralan ng Kadalagahan na Niihaman ni Rizal	Malolos, Bulacan
Mabuhay ang Mga Bayani	Bustos, Bulacan
Birthplace of Gen. Gregorio del Pilar	Bulacan, Bulacan
Labanan sa Kakarong	Balagtas, Bulaçan
Philippine Republic	Maiolos, Bulacan
Republika Filipina (1898-1901)	Malolos, Bulacan
Biyak na Bato	San Miguel, Bulacan
Birthplace of Marcelo H. del Pilar	Bulacan, Bulacan
Simbahan ng Malolos	Malolos, Bulacan
Birthplace of Marlano Ponce	Baliuag, Bulacan
Labanan sa San Rafael	San Rafael, Bulacan
Kuyapo, Nueva Ecija (bahay na tinigilan ni Apolinario Mabini)	Kuyapo, Nueva Ecija
Pook na Kinamatayan ni Aurora Quezon	Bongabon, Nueva Ecija
Antonio Luna's Death Place	Nueva Ecija

List of Historical Markers and Protected Areas in Bulacan and Nuova Ecija (Continued...)

Name	Location
Military Site	
Bulacan Military Area	Bustos, Bulacan
Paliparang Maniquis, P. A. A. C.	Cabanatuan City, Nueva Ecija
Monuments and National Historical Landmarks	
Church of Barasoain	Malotos, Bulacan
Personages	
Nicanor Abelardo at Sta. Ana (1893-1934)	San Miguel, Bulacan
Fetipe Buencamino	San Miguel, Bulacan
Jose Corazon de Jesus	Sta. Maria, Bulacan
Francisco Santiago	Sta. Maria, Bulacan
Heneral Isidoro Torres	Malolos, Bulacan
Dr. Maximo Viola	San Miguel, Bulacan
Joaquin Gonzales	Baliuag, Bulacan
Trinidad Tecson	San Miguel, Bulacan
Dr. Pio Valenzuela	Valenzuela, Bulacan
Jose P. Bantug	San Isidro, Nueva Ecija
Lazaro Francisco	Cabanatuan City, Nueva Ecija
Heneral Manuel S. Tinio	Aliaga, Nueva Ecija
Sites	
Pook na Kinatatayuan ng Bahay Paaralan ng Kadalagahan na Nilihaman ni Rizal	Malolos, Bulacan
Mabuhay ang Mga Bayani	Bustos, Bulacan
Birthplace of Gen. Gregorio del Pilar	Bulacan, Bulacan
Labanan sa Kakarong	Balagtas, Bulacan
Philippine Republic	Malolos, Bulacan
Republika Filipina (1898-1901)	Malolos, Bulacan
Biyak na Bato	San Miguel, Bulacan
Birthplace of Marcelo H. del Pilar	Bulacan, Bulacan
Simbahan ng Malolos	Matolos, Bulacan
Birthplace of Mariano Ponce	Baliuag, Bulacan
Labanan sa San Rafael	San Rafael, Bulacan
Kuyapo, Nueva Ecija (bahay na tinigilan ni Apolinario Mabini)	Kuyapo, Nueva Ecija
Pook na Kinamatayan ni Aurora Quezon	Bongabon, Nueva Ecija
Antonio Luna's Death Place	Nueva Ecija

List of Historical Markers and Protected Areas in Bulacan and Nueva Eclja (Continued...)

Name	Location	Proclamation No./Date	Area (Ha)
1. Minalungao National Park	Gapan & Gen. Tinlo, Nueva Ecija	R. A. 5100/06-11-97	2,018.00
2. Biak-Na-Bato National Park	San Miguel and Dona Remedios Trinidad, Bulacan	Proc. 223/11-16-37 Proc. 2204/06-05-82 Proc. 84/03-09-87 Proc. 401/4-11-89	2,117.00 330.62 2,117.00 658.85
3. Aurora Memorial Park	Bongabon, Nueva Ecija	Proc. 220/11-11-37	2,356.00
Angat Watershed Forest Reserve District (Metro Water District)	Montalban, Rizal, Norzagaray, Angat, San Rafael, and San Jose del Monte, Bulacan	Proc. 71/03-10-27 Proc. 391/04-30-68	55,709.10
5. Angat Watershed and Forest Range (Pilot)	Montalban, Rizat, Norzagaray, and San Jose del Monte, Bulacan	Proc. 391/04-30-68	6,600.00
6. Talavera Watershed Reservation	Carrangian, Lupao, San Jose, and Pantabangan, Nueva Ecija, and Sta. Fe, Nueva Viscaya	Proc. 350/12-28-38	37,156.00
Pantabangan-Carranglan Watershed Reservation	Pantabangan and Carranglan, Nueva Ecija	Proc. 561/05-21-69	84,500.00
Dona Remedios Trinidad/Gen. Tinio Watershed	Dona Remedios Trinidad, Bulacan, and Gen. Tinio, Nueva Ecija	Proc. 230/03-23-88	20,760.00

List of Key Informants by Category

Category	Group/Key Informants	
Туре І	Drivers	
	Public vehicles—tricycles, passenger-type jeeps, All- Purpose Utility Vehicles (AUVs), buses,	
	Private vehicles cargo trucks, delivery vans, cars and owner-type jeeps	
Type II	Rice mill owners in Bulacan and Nueva Ecija	
Type III	Public transportation commuters	
Type IV	Owners of commercial establishments such as gasoline stations and restaurants (particularly those who are dependent on transient customers, and will most probably be affected by the bypass) along the Pan-Philippine Highway	

Distribution of Interviewees According to Type and Place of Interview

Category	Number	Sampling Station	Municipality/City
	of Respondents		
	2	St. Joseph Church	San Jose City, Nueva Ecija
Tricycle	20	St. Joseph Church Shell Vistan, Plaridel	Plaridel Bulacan
	17	Bukana, San Vicente	San, Vicente, Gapan, Nueva Ecija
	13	BLTODA - Barrera Lote Operators and Drivers	Cabanatuan City, Nueva Ecija
	['']	Association	
	7	BBTA - Balsod Bayan Tricycle Association	Cabanatuan City, Nueva Ecija
	12	Sta. Arcadia	Cabanatuan City, Nueva Ecija
	5	Cirtoda	Cabanatuan City, Nueva Ecija
	7	Accta beside Jollibee	Cabanatuan City, Nueva Ecija
	1	Sto. Niño TODA - Sto. Niño Tricycle	Plaridel ,Bulacan
		Operators and Drivers Association	
Passenger Jeepneys	38	Central Transit Terminal	Cabanatean City, Nueva Ecija
•	3	Pag-Asa San, Jose	San Jose City, Nueva Ecija
	20	BASIDOPAS - Baliuag San Ildefonso Drivers &	Tambubong, San Rafael Bulacan,
		Operators Association	along Maharlika Highway
	1	Shell Vistan, Plaridel	Plaridel Bulacan
	1	Gapan	Gapan, Nueva Ecija
AUVs - All Purpose Utility Vehicles		San Jose Terminal	San Jose City, Nueva Ecija
	4	PAG-ASA Area	San Jose City, Nueva Ecija
	16	Central Transit Terminal	Cabanatuan City, Nueva Ecija
Bus	17	Central transit Terminal	Cabanatuan City, Nueva Ecija San Jose City, Nueva Ecija
	1	St. Joseph Church	San Jose City, Nueva Ecija Plaridel, Bulacan
Private Vehicles	7	Shell Vistan, Plaridel	Platides, odiacas
		leading the second seco	
		A Consultana Pina Nill	Sto. Domingo, Nueva Ecija
Rice Mill Owners	6	A Castellano Rice Mill	Abar 1st, San Jose City, Nueva Ecija
		ABAR Rice Mill	Sampaloc, San Rafael, Bulacan
		Sabariaga Rice Mill	San Rafael, Bulacan
		F.B. Herrera Rice Mill	Brgy, Sabang, Balluag, Bulacan
		Kat-Man Rice Mill	Malayantoc, Sto. Domingo, Nueva E
	 	A.R. Santos Rice Mill Francisco Poultry and Agricultural Supplies	Poblacion, San Rafael, Bulacan
Animal Feeds Dealer	4		Sampaloc, San Rafael, Bulacan
		Veramar Trading	Talavera, Nueva Ecija
		A-1 Agro Supply Coca-Cola Bottlers Phil.	Abar 1 ² , San Jose City, Nueva Ecija
Soft Drink Distributor	<u> </u>	Coca-Cola Bolders Fitti.	
A STATE OF THE STA	43	Baliwag Transit Terminal	San Jose City, Nueva Ecija
Commuters	48	Central Transit Terminal	Cabanatuan City, Nueva Ecija
CASE OF THE SECOND			
			Sta. Rosa, Nueva Ecija
Gasoline Stations		Sta. Rosa Service	Sta. Rosa, Nueva Edija Cabanatuan City, Nueva Edija
		Sta. Rosa Service Augustine Shell Service Station	
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX)	Cabanatuan City, Nueva Ecija
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service	Cabanatuan City, Nueva Ecija Baliuag, Bulacan
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Maharlika, Sn. Jose City, Nueva Ec San Rafael, Bulacan
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Maharlika, Sn. Jose City, Nueva Ec San Rafael, Bulacan
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Ec San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Ec San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Ec San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos Oistrict, Talavera, Nueva Eci
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija
Gasoline Stations	12	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija
		Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Oeleon CALTEX St. Jerome PETRON	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija
Gasoline Stations	12	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija
Gasoline Stations	12	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Oeleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridel, Bulacan San Jose City, Nueva Ecija
Gasoline Stations	12	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong Bulacan Bake House	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridel, Bulacan San Jose City, Nueva Ecija San Jose City, Nueva Ecija
Gasoline Stations	12	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Oeleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridel, Bulacan San Jose City, Nueva Ecija San Ildefonso, Bulacan Plaridel, Bulacan
Gasoline Stations Food/Restaurant Business	6	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong Bulacan Bake House Baliwag Lechon Manok	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Putitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San lidefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridel, Bulacan San Jose City, Nueva Ecija San Ildefonso, Bulacan Plaridel, Bulacan
Gasoline Stations	12	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong Bulacan Bake House	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Pulitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridel, Bulacan San Jose City, Nueva Ecija San Ildefonso, Bulacan Plaridel, Bulacan Plaridel, Bulacan Plaridel, Bulacan
Gasoline Stations Food/Restaurant Business Convenient Store	6	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong Bulacan Bake House Baliwag Lechon Manok	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Pulitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafael, Bulacan Cruz na Daan, San Rafael, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridel, Bulacan San Jose City, Nueva Ecija San Ildefonso, Bulacan Plaridel, Bulacan Plaridel, Bulacan Plaridel, Bulacan
Gasoline Stations Food/Restaurant Business	6	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong Bulacan Bake House Baliwag Lechon Manok	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Pulitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafaet, Bulacan Cruz na Daan, San Rafaet, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridet, Bulacan San Jose City, Nueva Ecija San Ildefonso, Bulacan Plaridet, Bulacan Plaridet, Bulacan Plaridet, Bulacan Plaridet, Bulacan
Food/Restaurant Business Convenient Store	6	Sta. Rosa Service Augustine Shell Service Station Sta. Monica (CALTEX) Sta. Monica Nissan Service GTC Shell Service Station Maharlika PETRON Violago PETRON Violago PETRON Violago CALTEX Service Station Rodriguez CALTEX Deleon CALTEX A-1 Shell Service Station Deleon CALTEX St. Jerome PETRON Chowking Plaridel Hot-Taste Food Restaurant Arriza's Restaurant & Pasalubong Bulacan Bake House Baliwag Lechon Manok	Cabanatuan City, Nueva Ecija Baliuag, Bulacan Baliuag, Bulacan Pulitan, Bulacan Mahartika, Sn. Jose City, Nueva Eci San Rafaet, Bulacan Cruz na Daan, San Rafaet, Bulacan San Ildefonso, Bulacan Poblacion, Talavera, Nueva Ecija Marcos District, Talavera, Nueva Ecija Sto. Domingo, Nueva Ecija Sto. Domingo, Nueva Ecija Plaridet, Bulacan San Jose City, Nueva Ecija San Ildefonso, Bulacan Plaridet, Bulacan Plaridet, Bulacan Plaridet, Bulacan Plaridet, Bulacan

Distribution of Interviewees According to Type and Place of Interview

Catagory	Number	Sampling Station	Manicipality City
ing the supportant of the state	of Respondents		CONTROL PROFIT AND THE PROFIT OF THE PROFIT
Type I	<u>፞ૢૠૢ૱૱૱</u>	<u>#32199098440 8000 - Principal Additional Section (198</u> St. Joseph Church	(28) (27) A (1998) A (1998) A (1998) A (1998) A (1998) - San Jose Ody Nicell Fills
Thought	20	Shell Vistan, Piar de	Plandel Bulatan
:	17	Bukana, San Vicente	San Moerte Gagrap November 6
	11	BLTODA - Barrera Lote Operators and Drivers	Caranatuan City, Norsa I ripa
	''	Association	Samuel Control of the
		BBTA - Baisod Bayan Tricytle Association	Capanatum City Noeva Edga
:	7	Sta Arcadia	Cacanatoan City, Noeva Edica
	12	C-rtoda	Cabanatean Orty, Nueva Etc., 1
	5 7	Accta beside Joli bee	Capanatuan City, Nuevo Fic. a
		Sto Niño IODA - Sto Niño Thiave's	Plandel Bulacan
		Operators and Drivers Association	
L.,	33	Central Transit Terminal	Catanatuan Oity, Nueva Eloja
. Prassenger Jeephays	3	Pag-Asa San Jose	San Jose City, Nueva Ec _y a
	50	BASIDOPAS - Batuag San I-defonso Orivers &	Tambutiong, San Rafael Bularian
	! "	Operators Association	atong Mahariika Highway
	1	She't Vistan, Plande	Plandel Bulacan
	jj	Gapan	Gapan Nueva Ecya
	∳ : · · · · · · · · · · · · · · · · ·	San Jose Termina'	San Jose City, Nueva Ecga
Agrys - Al-Pulpose Utility Vehicles	4	PAG ASA Area	San Jose City, Nueva Edija
	15	Central Transit Termina	Catanatuan City Nueva Ecita
<u> </u>	17	Central transit Termina	Capanatuan City, Nueva Edja
Bus Bus		St Joseph Church	San Jose City, Nueva Ecita
		Shell Vistan Plande	Plande' Bo'acan
Private Vehicles	1	Shert vistant Flatise:	1
े स्टब्स्टर्केट करने का का कार्यक्षित संस्थिति है स्टब्स्टर्क स्थान है	i Areas energia estado		
Type II		<u> 2000 a variation de contrate de la recommentario de la recomposição de la contrate de co</u>	Sto Domingo Neeva Edija
Rice Mili Owners	6	A Castellano Rice M.3	Abar 15 San Jose City, Nueva Edija
•	•	ABAR Rice Mili	Sampaloc, San Rafael, Bulacan
•		Sabariaga Rice Mil	San Rafael, Bulaban
;		f B Herrera Rice M	\$ <u>*</u>
:		Kat-Man Rice Mil	Brgy Sabang Baliuag Bulatan j Matayantoc Sto Domingo Nueva Edia
· · · · · · · · · · · · · · · · · · ·	. .	A.R. Santos Rice Mil	Poblacion San Rafael Bulacan
Animal Feeds Dealer	4	Francisco Poultry and Agricultural Supplies	Sampaloc, San Rafael, Bulacari
:	i	Veramar Trading	Ta'avera Nueva Ecga
i		A-1 Agro Supply	Abar 1 st San Jose City, Nueva Edja
Soft Drink Distributor	1	Coca-Cola Bottlers Phil	Abar 1 San Jose City, Nueva Ecija
	ner ere ere ere ere ere ere ere ere ere		ATT PARTY SECRETARIAN MEN SU ARTICO DE L'ESC
Type !!	110 0 10 10 10 10 10 10 10 10 10 10 10 1		San Jose City, Nueva Ecija
Conmuters	43	Baliwag Transit Terminal	Cabanatuan City, Nueva Edia
	43	Central Transit Terminal	
Type IV	1488 N. S.		See Rose Name Form
Gasoline Stations	12	Sta Rosa Service	Stal Rosa, Nueva Edja Cabanatuan City, Nueva Edja
· ·		Augustine Shell Service Station	
	\$	Sta Monica (CALTEX)	Baltuag Bulacan
		Sta Monica Nissan Service	Baltuag Bulasan
		GTC Shell Service Station	Pulitan Bulacan Maharilika Shi Jose City, Nueva Enga
	:	Maharika PETRON	
		Violago PETRON	San Rafaer, Butasan
		Violago CALTEX Service Station	Cruz na Daan San Rafael Bullian E San I'defonso Bulacan
:		Rodriguez CALTEX	· · · · · · · · · · · · · · · · · · ·
	1	Deteon CALTEX	Poblacion Talavera Nueva Luga Marcos District, Talavera Nueva Euga
i		A-1 Shell Service Station	* · · · · · · · · · · · · · · · · · · ·
	Ì	Deleon CALTEX	Cabanatuan City, Nueva Edija
		St. Jerome PETRON	Sto Domingo, Nueva Ecija
			Donald B.Jones
Food Restaurant Business	6	Chowking Praride!	Prandel Bulacan
ı		Hot-Taste Food Restaurant	San Jose City Nueva Ecija
		Arnza's Restaurant & Pasa'ubong	San tidefonso Bulacan
	!	Bulacan Bake House	Plandet Bulacan
		Baltwag Lechon Martick	Plandet, Bulacan
			Olive del Di tanna
Convenient Store		9 Wines M Liquor	Piandel Bulacan
1			Con Refer Didees
Trading	t	3th Sisters	San Rafaet Buracan
	_,		Piandet Bulacan
Auto Supely	<u> </u>	Forum Auto Supply	riander bulada i
<u></u>	L	<u>. </u>	

Results of Interview on question if Income is affected by the traffic congestion along the national highway

	No. of Respon- dents	Yes	%	No	%	No Answer	%
Type I (Drivers)							
Tricycles	76	71	93.4	4	5.3	1	1.1
Passenger-type jeeps	69	58	84.1	4	5.8	7	8.3
AUVs	27	26	96.3	1	3.7	1 . 1	•
Buses	17	13	76.5	4	23.5	T - 1	-
Cargo trucks	14	14	100.0	-	0.0	T - 1	•
Total	203	182	\$ 80 to	13	6.4	8	3.9
Type il							
Owners of rice mills	10	6	60.	1	10	3	30
						1 !	

Results of interview on question if income is affected by the traffic congestion along the national highway $\frac{1}{2}$

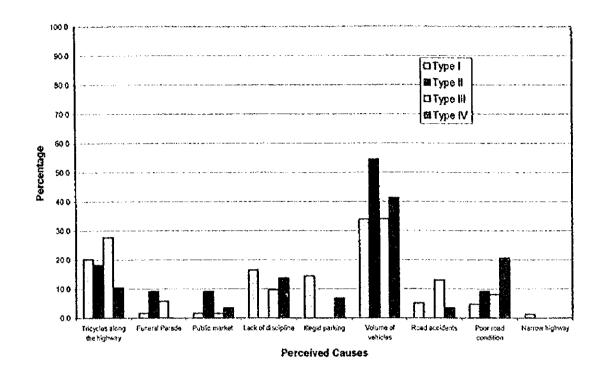
	No. of Respon- dents	Yes	%	No	%	No Answer	%
Type I (Drivers)							
Tricycles	76	71	93.4	4	5.3	1	1.1
Passenger-type jeeps	69	58	84.1	4	5.8	7	83
AUVs	27	26	96 3	1	3.7		•
Buses	17	13	76.5	4	23.5	-	-
Cargo trucks	14	14	100.0	-	0.0	- 1	
Total	203	182	· 89.7	13	6.4	8	3.9
Type II	man de la companya d						
Owners of rice mills	10	6	60	1	10	3	30

Feasibility Study on Upgrading Inter-Urban Highway System Along the Pan-Philippine Highway ROADSIDE ENVIRONMENTAL SURVEY

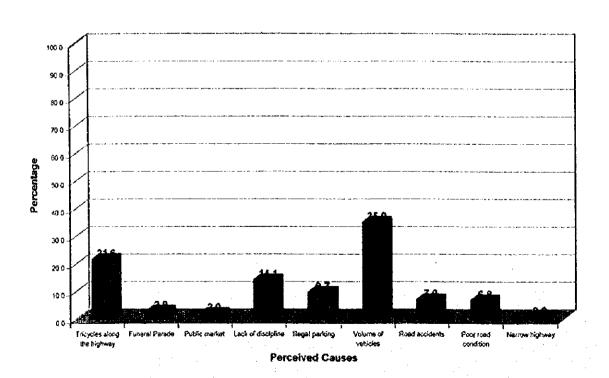
291 Number of Respondents 0.0 0.0 4 ₹ õ ō 0.0 6.0 Narrow highway 20.7 14 4.8 9.1 5 8.1 ω 6 6.8 Poor road condition 2,0.7 0.0 13.0 Answers to questions on respondents' perceived causes of traffic congestion along the study road 9 3,4 5.2 O 6 15 Road accidents 7 8 15 7 7 41.4 159 84.0 \$ 42 34.1 350 5 8 9 Illegal parking vehicles 0.0 6.9 14.4 0.0 44 2.6 26 10 42 *4/4 T 9.8 33 64 16.5 12 7 0.0 13 **∞** 8 ō Public market discipline 2.0 1.6 3,4 (C) ര õ S 9 0.0 2.9 5.7 0 4 0 o 0 6 Funeral Parade 96 86 27.6 10.3 8 20.3 18.2 건없다 6 9 2 59 Tricycles Gasoline station owners Percentage to Total Passenger-type jeep Percentage to total Percentage to total Percentage to total Rice mill owners Percentage to total OVERALL TOTAL Cargo trucks Sub-Total Commuters Private cars Tricycle Buses Type IV AUVs Type III 7De = ype I

Feasibility Study on Upgrading Inter-Urban Highway System Along the Pan-Philippine Highway ROADSIDE ENVIRONMENTAL SURVEY

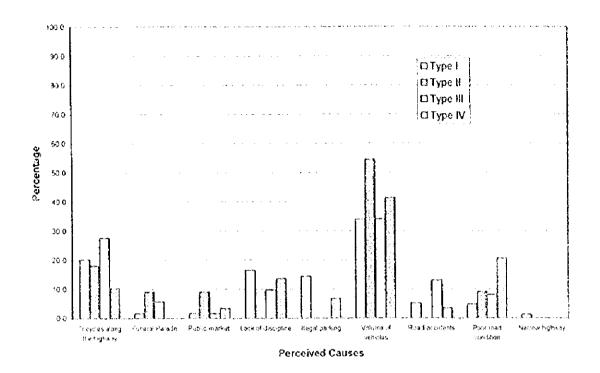
291 Number of Respondents 0.0 0.0 0.0 5 v 0 v 4 0 $\overline{\circ}$ 60 Narrow highway 6.8 33 5 65 ω 20.7 ö Θ ੋ 9 0 乊 8.4 9.7 Poor road condition 13.0 3.4 Answers to questions on respondents' perceived causes of traffic congestion along the study road 32 7.0 ത c) 5.2 00 9 0 5 accidents Road 15 7 8 7 8 99 99 P 4.1.4 37 34.0 54.5 42 8.7 159 35.0 Θ 7 llegal parking vehicles 6.9 10 14.4 õ 0.0 Ñ 4 9.7 4 Ö 75 0 26 8 13.8 48 16.5 ō 0.0 12 ٧ 64 14.1 က 00 25 Public market discipline 3.4 2.0 9 σı $\bar{\circ}$ 9.1 $\bar{\sim}$ $\overline{\circ}$ S 0.0 2.9 4 0 0 0 $\overline{\circ}$ LC) 1.7 6 5.7 ö Funeral Parade 21.6 20.3 18.2 27.6 <u>8</u> 0 9 7 34 10.3 98 Q) 59 Tricycles Gasoline station owners Percentage to Total Passenger-type jeep Percentage to total Percentage to total Percentage to total Rice mill owners Percentage to total OVERALL TOTAL Cargo trucks Sub-Total Private cars Commuters ricycle Buses Type III ype IV AUVs vpe II Voe 1



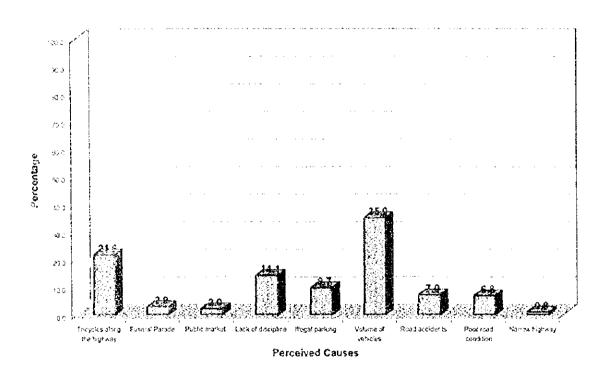
Perceived Causes of Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (By Sector)



Perceived Causes of Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (Overall)



Perceived Causes of Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (By Sector)



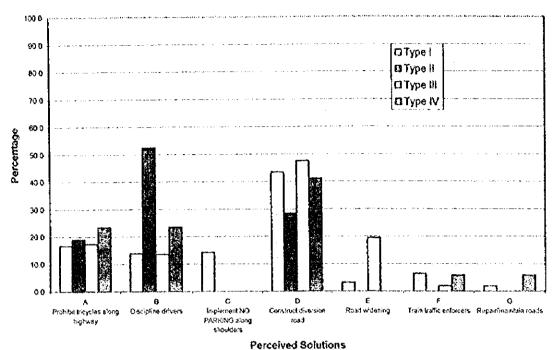
Perceived Causes of Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (Overall)

Feasibility Study on Upgrading Inter-Urban Highway System Along the Pan-Philippine Highway ROADSIDE ENVIRONMENTAL SURVEY

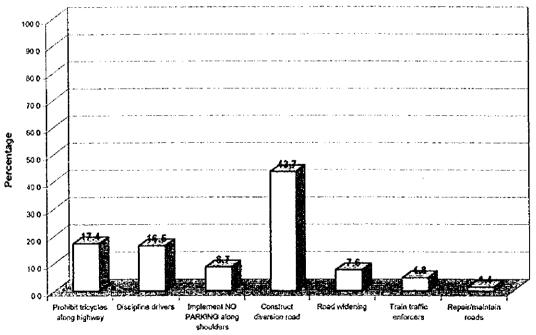
Number of Respondents 0.0 0.0 5.9 1,4 4000004 <u></u> Ö 0 5 Repair/maintain roads 6.5 0.0 <u>6</u> 8.4 5.9 17 Answers to questions on respondents' perceived solutions to traffic congestion along the study road Train traffic enforcers 3.2 0.0 19.4 0.0 7.6 0 40004 27 Road widening 156 6 28.6 47.6 47.7 49 43.7 diversion road Construct 14.4 0.0 Implement NO PARKING along 0.0 0 8.7 0000 0 5 ō Ö 5 7 shoulders 13.9 52.4 13.6 23.5 4 59 16.5 ∞ ဗ္က Discipline drivers 16.7 17.5 23.5 19.0 6 10 4 0 4 18 13 36 62 Prohibit tricycles along highway Gasoline station owners Percentage to Total Passenger-type jeep Percentage to Total Percentage to Total Percentage to Total Rice mill owners OVERALL TOTAL Percentage to total Cargo trucks Sub-Total Private cars Commuters Tricycle Buses AUVs Type IV Type III ype II

Feasibility Study on Upgrading Inter-Urban Highway System Along the Pan-Philippine Highway ROADSIDE ENVIRONMENTAL SURVEY

Respondents Number of 0.0 000046 0.0 6.9 5 ज ठ O 0 4,1 Repair/maintain roads 6.5 0.0 5.9 ∞. 6. ,--,-20 Answers to questions on respondents' perceived solutions to traffic congestion along the study road Train traffic enforcers 7.6 3.5 0.0 19.4 0.0 5 ō 0 4 12 O ō 27 20 Road widening 41.2 <u>ज</u>ूळाळाज 47.6 158 43.5 28.6 43.7 39 ω 8 20 diversion road Construct Implement NO PARKING along 0.0 0.0 0.0 5 8 N S O O ō ō 0 4.4 8.7 5 shoulders 13.9 52.4 13.6 23.5 16.5 59 <u>~</u> ō 30 7 Discipline drivers 23.5 9년 19.0 17.5 17.4 4 0 36 7 4 92 3 16.7 8 Prohibit tricycles along highway Gasoline station owners Percentage to Total Passenger-type jeep Percentage to Total Percentage to Total Percentage to Total Rice mill owners Percentage to total OVERALL TOTAL Cargo trucks Sub-Total Private cars Commuters Tricycle Buses AUVs Type III voe IV ype !! ypel



Perceived Solutions to Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (By Sector)



Perceived Solutions

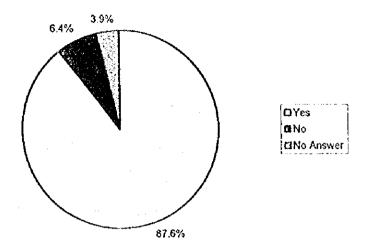
Perceived Solutions to Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (Overall)

Answers to question on whether the respondents are in favor of a bypass

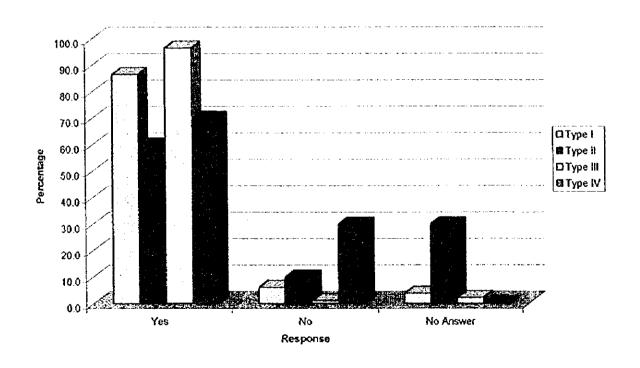
	Sample Size	Yes	%	No	%	No Answer	%
Typel							
Tricycles	76		93.4	4	5.3		1.1
Passenger-type jeeps	69	58	84.1	4	5.8		8.3
AUVs	27	26	96.3		3.7	0	0.0
Buses	17	13	76.5	. 4	23.5		0.0
Cargo trucks	14	14	100.0	0	0.0		0.0
Private cars	7	6	85.7	1	14.3	0	0.0
TOTAL	210	182	86.7	13	6.2	8	3.8
Type II							
Owners of rice mills	10	6	60.0	1	10.0	3	30.0
Type III							
Commuters	90	87	96.7	1	1.1	2	2.2
Туре IV							
Gasoline station owners	20	14	70.0	6	30.0	0	0.0
OVERALL TOTAL	330	289	30 - 87.6	21	6.4	13	3.9

Answers to question on whether the respondents are in favor of a "controlled" bypass (e.g., if bypass (e.g., if tricycles will not be allowed to use it)

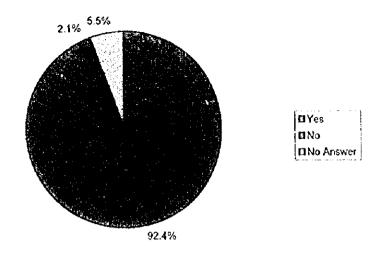
	Sample Size	Yes	%	No	%	No Answer	%
Type I							
Tricycles	76	72	94.7	2	2.6		2.1
Passenger-type jeeps	69	60	87.0	1	1.4	 	9.2
AUVs	27	23	85.2	1	3.7	3	3.5
Buses	17	15	88.2	1	5.9		1.1
Cargo trucks	14	14	100.0	0	0.0	0	0.0
Private cars	7	6	85.7	0	0.0		1.2
TOTAL	210	190	90.5	5	2.4	15	7.1
Type II							
Owners of rice mills	10	10	100	0	0.0	0	0.0
Type III							
Commuters	90	87	96.7	0	0.0	3	3.3
Type IV							
Gasoline station operators	20	18	90.0	2	10.0	0	0.0
OVERALL TOTAL	330	305	92.4	7	2.1	18	5.5



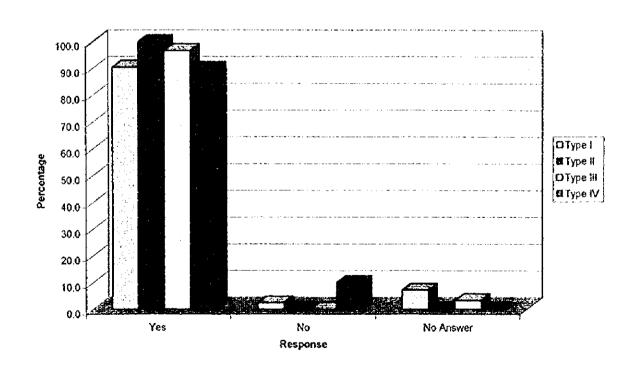
Favorability of A Bypass As A Solution to Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (Overall)



Favorability of a Bypass as a Solution to Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (By Sector)



Favorability of A Controlled Bypass As A Solution to Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (Overall)



Favorability of A Controlled Bypass As A Solution to Traffic Congestion Along the Sta. Rita-San Jose Section of the Pan-Philippine Highway (By Sector)

∴ 1995 and Projected Hierarchy of Urban Centers Along the Study Road

Level in Urban Hierarchy	1995	2007
Major Urban Center	Balivag	Baliuag
	Plaridel	Plaridei
		Pulilan
Secondary Urban Center	Pulilan	San Miguel
	San Miguel	San Ildefonso
Medium Town/Non-Central Places	San Rafael	San Rafael
	San Ildefonso	

of Bulacan (1998-2007).

1993 and Projected Hierarchy of Urban Centers Along the Study Road

Level in Urban Hierarchy	1993	2002
Large Town (Primary Urban Center A)	Cabanatuan City	Cabanatuan City Gapan Talavera San Jose City
Medium Town (Secondary Urban Center A)	Gapan Talavera San Jose City	Muñoz Sta. Rosa
Small Town (Secondary Urban Center B)	Muñoz Sta. Rosa	-

Framework Plan/Comprehensive Provincial Land Use Plan, Province of Nueva Ecija, Planning Period 1993-2002

Viability of the alter of existing environment			l-Baliuag Bypa	ss in terms			
	Alternative Routes						
Environmental Control Points	1	2	3	4			
Physical constraints	low	low	low -	medium			
Biological constraints	medium	low	low	medium			
Historical value	none (?)	none (?)	none (?)	none (?)			
Density of communities	medium	medium	medium	low			
Agricultural productivity	medium	low	low	medium			
Conflict with land use plan	medium	low	Low	high .			
Overall Ranking	2 nd			3 rd			

1995 and Projected Hierarchy of Urban Centers Along the Study Road

Lovel in Urban H.erarchy	1995	2007
Major Urban Center	Balluag	Baliuag
	Plandel	Plaridel
		Puhlan
Secondary Urban Center	Puldan	San Miguel
	San Miguel	San Ildefonso
Medium Town:Non Central Places	San Rəfael	San Rafael
	San Ildefonso	

1993 and Projected Hierarchy of Urban Centers Along the Study Road

Cabanatuan City	Cabanatuan City Gapan Talavera
İ	San Jose City
Gapan Talavera San Jose City	Muñoz Sta. Rosa
Muñoz Sta Rosa	-
	Falavera San Jose City Muñoz

Viability of the alter of existing environr			-Balluag Bypa	ss in term		
	Alternative Routes					
Environmental Control Points	1	2	3	4		
Physical constraints	low	fow	low	medium		
Biological constraints	medium	low	low	medium		
Historical value	none (?)	none (?)	none (?)	none (?)		
Density of communities	medium	medium	medium	low		
Agricultural productivity	rnedium	low	low	medium		
Conflict with land use plan	medium	low	Low	high		
Overall Ranking	2 nd	11 11 11 11	- 4st	3 ^{'d}		

Viability of the alter existing environme		or the Cabana	tuan Bypass	In terms o
		Alternative	Routes	
Environmental Control Points	1	2	3	4
Physical constraints	low	low	low	medium
Biological constraints	high	low	low	low
Historical value	none	none	none	none
Density of communities	medium	low	medium	high
Agricultural productivity	low	medium	medium	high
Conflict with land use plan	none	none	none	попе
Overall Ranking	3'5		2 nd	4 th

Viability of the alte Jose Bypass environmental con	in terms d	
	Alternati	ve Routes
Environmental Control Points	1	2
Physical constraints	low	medium
Biological constraints	low	low
Historical value	none	none
Density of communities	medium	medium
Agricultural productivity	medium	low
Conflict with land use plan	high	попе
Overall Ranking	2 nd	A STATE OF

Viability of the alter existing environme		or the Cabana	tuan Bypass	in terms o
		Alternative	Routes	
Environmental Control Points	1	2	3	4
Physical constraints	low	low	low	medium
Biological constraints	high	low	low	low
Historical value	none	none	none	none
Density of communities	medium	low	medium	high
Agricultural productivity	low	medium	medium	high
Conflict with land use plan	none	none	none	none
Overall Ranking	3,3	12.56	2 ^a	4"

Viability of the alte Jose Bypass environmental con	in terms (
	Alternat	ive Routes
Environmental Control Points	1	2
Physical constraints	low	medium
Biological constraints	low	low
Historical value	none	none
Density of communities	medium	medium
Agricultural productivity	medium	low
Conflict with land use plan	high	none
Overall Ranking	2 nd	150

APPENDIX 10

- 10.1-1 Construction Cost, ROW Acquisition & Compensation and Maintenance Costs of Alternative Routes
- 10.2-1 Disbursement Schedule of Project Cost
- 10.2-2 Cash Flow of Economic Cost and Benefit for Route-2 of All Bypass Alternatives
- 10.2-3 Annual Disbursement Schedule for All Alternative Routes of All Bypass Routes (Financial Price)
- 10.2-4 Annual Disbursement Schedule for All Alternative Routes of All Bypass Routes (Economic Price)
- 10.3-1 Initial EIA

APPENDIX 10.1-4 Summary of Estimated Cost by Bypass Route

•	APPENDIA 10.1-1 Summary	summary of Estimated cost by bypass forces	ost by bypass		Unit: Million Peso
			Cost by Bypass Route	ass Route	
Bypass Section	Item of Cost	Route-1	Route-2	Route-3	Route-4
	Construction Cost	2.861	2,568	2,331	1,632
	ROM acquisition	624	702	784	293
	Compensation	12	18	25	18
Baliuan Bybass	Total	3,497	3,288	3,140	1,943
	Maintenance Cost (10 Year)	49	33	31	29
	Tool acipiation	3 721	2.955	2.462	1.893
	DOING CONTINUE COST	294	322	291	188
	אסאי מכישומות איי	76	21	25	25
	Compensation	+2	3	À.	007
Cabanatuan Bypass	Total	4,039	3,308	2,778	2,106
	Maintenance Cost (10 Year)	08	46	37	33
	Construction Cost	316	243		
	ROW acquisition	32	27		
	Compensation	9	12		
San Jose Bypass	Total	354	282		
	Maintenance Cost (10 Year)	21	10		

Estimated Construction Cost of Baliuag Bypass by Alternative Route

						,					
				œ	Route 1	OC 1	Route 2		Route 3		Route 4
	item	ב ב	Unit Cost	Length	Length=22.50 km	Lengt	Length≈22.00 km	Leng	Length=20.25 km	Leng	Length=16.8 km
	:			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
	New Road Construction (Urban Section-1)	Ē	90,600,000	21.45	1,943,370,000	21.35	1,934,310,000	9.61	1,775,760,000	16.8	1,522,080,000
	PCIG Bridge (4-lane)	ξ.	000.699	1000	000,000,699	425	284,325,000	425	284,325,000	٥	-
	RCDG Bridge (4-lane)	E	652,000	ያ	32,600,000	ş	68,460,000	105	68,460,000	٥	
	Box Culver (2-1 8x1 8x45m)	each	35.000	SS.	700,000	16	260,000	10	350,000	23	805.000
	Intersection (4-lane x 2-lane)	each	926.000	9	5,556,000	9	5,556,000	9	2,556,000	4	3,704,000
Construction	New Access Road (2-Lane)	Ş	25,553,000	3.0	76,659,000	3.2	81,769,600	2.5	63,882,500	1.9	48,550,700
Cost	Sub-Total (Bridge)			╌	701,600,000		352,785,000		352,785,000		1
3	Sub-Total (Other than Bridge)			-	2,026,285,000		2,022,195,600		1,845,548,500		1,575,139,700
	Total	Ŀ			2,727,885,000		2,374,980,600		2,198,333,500		1,575,139,700
	Interchange at Nanila North Exp.way	s.			133,164,000		193,049,000		133,164,000		56,403,000
	Total				2,861,049,000	-	2,568,029,600	-	2,331,497,500		1,631,542,790
	Width of ROW	ε		ß		প্ত		OS		\$	
Right of Way	Agricultural Aroa	Ē	130,000	965.3	125,482,500	939.4	122,122,000	833.0	108,290,000	798.0	103,740,000
Acquisition	Residential Area	2	3,950,000	53.6	211,818,750	74.7	295,163,750	78.4	309,680,000	25.2	99,540,000
	Commertial Area	2	5.445,000	32.2	175,192,875	32.0	174,376,125	268	213,444,000	8.4	45,738,000
	Industrial Area	臣	5,178,000	21.5	111 068,100	21.4	110,550,300	29.4	152,233,200	8.4	43,495,200
	Total	<u>1</u>		1072.5	623,562,225	1067.5	702,212,175	980.0	783,647,200	840.0	292,513,200
	Concrete Building	each		0		0		0		٥	
	Concrete House	each	1,200,000	10	12,000,000	15	18,000,000	20	24,000,000	15	18,000,000
	Wooden House	each	20,000	10	200,000	10	200,000	10	200,000	\$	100,000
Compensation	Sansari Store	each		0		0		0		0	
-	Temporary Building	each		0		0		o		Ö	
	Big Tree	each	5,000	20	100.000	30	150,000	22	250,000	ଷ	100,000
-	Total				12,300,000		18,350,000		24,450,000		18,200,000
:				÷							
	Section Total Programmer Control	200			3,496,911,226		3,288,591,775		3,139,594,700		1,942,255,900

Note: Quantities of ROW acquisition and compensation are roughly estimated based on ocular survey.

Estimated Construction Cost of Cabanatuan Bypass by Alternative Route

				ď	Route 1	ď	Route 2	"	Route 3	ur	Route 4
	Item .	±	Unit Cost	Length	Length=35.00 km	Length	Length=29.50 km	Leng	Length=24.00 km	Leng	Length=19.5 km
		<u> </u>		Quantity	Amount	Quantity	Amount	Quantity	Amount	Ouantity	Amount
	New Road Coastruction (Urban Section-1)	£	90,600,000	8	6	29.5	7	23.7	2,147,220,000	19.3	1,748,580,000
	OCC Diday Attack	Ε	900 699	280		280	187,320,000	280	187,320,000	150	100,350,000
	Polo Gridge (4-jaile)	1	652 000	20		20		30	19,560,000	60	39,120,000
	RCLAS Bridge (4-lane)	1	35,000	25	875,000	25	875,000	10	350,000	6	315,000
•	Box Culven (2-1.0x1.0x4011)	1	000,929	8	5.556 000	*	6,482,000	9	5,556,000	5	4,630,000
	Intersection (4-talks x charts)	3	25 553 000	14.5	370.518.500	4.0	102,212,000	4.0	102,212,000	0	•
Construction	Now Access Road (2-care)	Ž	20,000		200 360 000		200,360,000		206,880,000		139,470,000
Cost	Sub-10tal (Bridge)				3 520 769 500		2,755,089,000		2,255,338,000		1,753,525,000
	Total			:	3,721,129,500		2,955,449,000		2,462,218,000		1,892,995,000
					-						
								•			

					:					3	
	Width of ROW	٤		S		50		ያ		3	100
Right of Way	Acreoutural Area	Ьa	48,300	1,665.6	80,448,480	1372.4	66,286,920	1102.1	53,229,015	916.8	44,279,025
Acquistion	Posidontial Area	Ę	2,605,000	34.7	90,393,500	58.4	152,132,000	59.3	154,346,250	29.0	75,414,750
	Commental Area	ha	3.535,400	17.4	61,339,190	14.6	51,616,840	11.9	41,894,490	9.7	34,116,610
-	Industrial Appa	ž	3,535,400	17.4	61,339,190			11.9	41,894,490	2.6	34,116,610
	Total	۳.		1735.0	293,520,360	1460.0	321,652,600	1135.0	291,364,245	965.0	187,926,995
	Concrete Building	Gach		0		O		0	j	٥	
	Concrete House	each	1,200,000	20	24	25	g	20	24	8	24,000,000
	Wooden House	each	20,000	10	200,000	15	300,000	15	300,000	ç	200,002
Compensation	Sarisari Store	each		0		Ø		0		٥	
	Temporary Building	each		0		0		0		٥	
	Bio Troe	each	5,000	8	150,000	30		40		S	250,000
	Total				24,350,000		30,450,000		24,500,000		24,450,000
											
	Total				4,038,999,860		3,307,551,600		2,778,082,245		2,105,371,995

Estimated Construction of San Jose Bypass by Alternative Route

						ľ		
	:				Route 1	Route 2	te 2	
	ltem	ž	Unit Cost	Leng	Length=9.00 km	Lengt	Length≖6.50 km	
				Quantity	Amount	Quantity	Amount	
	New Road Construction (Urban Section-1)	кm	32,006,000	0.6	288,054,000	6.5	208,039,000	
	PCIG Bridge (4-lane)	l.m.	•	0	•	0	•	
	RCDG Bridge (4-lane)	Ę.		0	•	0	•	
	Box Culvert (2-1.8x1.8x45m)	each	35,000	5	175,000	8	280,000	
	Intersection (2-lane x 2-lane)	each	926,000	2	1,852,000	2	1,852,000	
Construction	New Access Road (2-lane)	ĸ	25,553,000	1.0	25,553,000	1.3	33,218,900	
Cost	Sub-Total (Bridge)				-		1	
	Sub-Total (Other than Bridge)				315,634,000		243,389,900	
	Total Processing Comments of the Comments of t				315,634,000		243,389,900	
	Width of ROW	ε		52		25		_
Right of Way	Agricultural Area	2	48,300	218.3	10,541,475	156.0	7,534,800	
Acquisition	Residential Area	æ	2,605,000	2.3	5,861,250	3.3	8 466,250	
	Commertial Area	ьц	3,535,400	2.3	7,954,650	1.6	5,745,025	
	Industrial Area	Бď	3,535,400	2.3	7,954,650	1.6	5,745,025	
	Total	ha	-	225.0	32,312,025	162.5	27,491,100	
						1		
	Concrete Building	each		0		0		
	Concrete House	each	1,200,000	5	000'000'9	10	12,000,000	
	Wooden House	each	20,000	9	100,000	5	100,000]
Compensation	Sarisari Store	each		0		0		
	Temporary Building	each	:	0		0		
:	Big Tree	each	2,000	10	20,000	15	75,000	
	Total				6,150,000		12,175,000	

	Total				354,096,025		283,056,000	

Note: Quantities of ROW acquisition and compensation are roughly estimated based on ocular survey.

Estimated Cost of Improvement of Burol Interchange (Bypass Route-2)

	:	1000	Sch	Scheme-2	Scheme-4	ne-4
Item		כחור כסאו	Quantity	Amount	Quantity	Amount
Pavement	Sq.m	1,812	22,817	41,344,404	18,995	34,418,940
Embankment	S E	167	111,728	18.658,576	135,720	22,665,240
Superstructure (PC Box Girder)	Sq.m	34,515	1,050	36,240,750	1,978	68,270,670
Substuructure (Abutment)	CE.ID	808'8	386	3,399,888	1,050	9.248.400
Substructure (Pier)	E.i.s	8,808	170	1,497,360	554	4,879,632
Foundation Piles	Ę.	3,217	1,380	4,439,460	4,080	13,125,360
Sub-total				105.580.438		152,608,242
Miscellanious Structures and Facility & Labo.(15%)	citity & L.	abo.(15%)		15,837,066		22,891,236
Contingency (10%)				12,141,750		17,549,948
Total				133,559,254		193,049,426

Estimated Cost of Improvement of Interchange Connection with Manila North Exp.way

	1 2 2 2	Unit	ď	Route-1	l ĕ	Route-2	Ä	Route-3	Ŗ	Route-4
Item	5	Cost	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Pavement	sq.m	1,812	15,238	27,611,256	18,995	34,418,940	15,238	27.611,256	18,433	33,400,596
Embankment	cu.m	167	110,500	18,453,500	135,720	22,665,240	110,500	18,453,500	66,985	11,186,495
Superstructure (PC Box Girder)	sq.m	34,515	1,350	46,595,250	1,978	68,270,670	1,350	46,595,250	,	-
Substuructure (Abutment)	cu.m	8.808	521	4,588,968	1,050	9,248,400	521	4,588,968	ı	1
Substructure (Pier)	cu.m	808'8	230	2,025,840	554	4,879,632	230	2,025,840	1	1
Foundation Pites	l.m.	3,217	1,863	5,993,271	4,080	13,125,360	1,863	5,993,271	i	١
Sub-total				105,268,085	:	152,608,242		105,268,085		44,587,091
Miscellanious Structures and Facility & Labo. (15%)	Labo.(15%	(%)		15,790,213		22,891,236		15,790,213		6,688,064
Contingency (10%)				12,105,830		17,549,948		12,105,830		5,127,515
					-		_			
Total				133,164,128		193,049,426		133,164,128		56,402,670

Estimated Cost of Road Maintenance

Unit : Peso per Year

		 -		Maintenance Cos	Maintenance Cost by Bypass Route	
Bypass Section		<u>l</u>	Route-1	Route-2	Route-3	Route-4
	Road Length (L)	Ę	21.45	21.35	19.60	16.8
	FMK	-	85,000	95,000	95,000	85,000
•	Surface Factor (SF)	-	1,15	1.15	1,15	1.15
Boting Burger	Width Factor (WF)		2.35	1.60	1.60	1 75
nendio Spone	LYENKXSFXWF	l	4.927.333	3,339,140	3,065,440	2,873,850
						*
	Bridge Length (BL)	Ē	1,050	0.650	0.650	
	Bridge Factor (BF)	-	0.01	0.03	10.0	0.01
	EMKXBLXBF	-	893	553	923	,
		-				
	Total		4,928,726	3,339,693	3,065,993	2,873,850
	Road Length (L)	κw	34.70	29.20	23.70	19.30
	EMK	-	95,000	85,000	85,000	85,000
	Surface Factor (SF)		1,15	1.15	1.15	1.15
4.	Width Factor (WF)	-	2.35	1.60	09:1	1.75
Cabadatuan Byoass	LXEMIKXSFXWF		7,971,024	4,566,880	3,706,680	3,301,506
						•
•	Bridge Length (BL)	Ę	0.32	0.32	0.33	0.21
	Bridge Factor (BF)		10.0	10.0	0.01	0.07
	EMKx8Lx8F		272	272	281	179
		-				
-	Total		7,971,296	4,567,152	3,706,961	3,301,685
	Road Length (L)	E	8.00	6.50		
	EMK		000 58	000'58		
	Surface Factor (SF)	_	1,15	1,15		
	Width Factor (WF)		2.35	1.60		
San Jose Bypass	LXEMKKSFXWF		2,067,413	1,016,600		
:		-				
	Bridge Length (BL)	Kttl	•	•		
	Bridge Factor (BF)		0.01	0.01		
	EMKxBLxBF					
	Total		2,067,413	1,016,600		

Estimated Construction Cost per km of New Road Construction (Embankment Section)

2.3	1.0 km	Amount	154,238	3,480,000	10,044	17,275,000	240,000	1,971,360	9,660,000	2,524,000	О	0	429,000	745,600	0	242,184	0	O	1,135,350	0	30.000	381,000	1,038,240	O	0	0		3,931,602	2,162,381	454,100		6 B C B	45,864,098	4,586,410	50,450,508	 **************************************	50,450,508
Rural Type-2	Length ≖	Quantity	29,000	29,000	108	69,100	20,000	5,920	14,000	4,000	0		75	640	0	9			290	0	9	750	10,080		0	0	_										
ype-1	1.0 km	Amount	180,830	4,080,000	12,090	20,592,500	300,000	2,311,020	000'099'6	1,577,500	2,560,560	0	514,800	880,740	0	242,184	0	0	2,192,400	0	30,000	381,000	1,038,240	0	0	0		4,655,386	2,560,463	537,697			54,307,410	5,430,741	59,738,151		59,738,151
Rural Type-1	Length =	Quantity	34,000	34,000	130	82,370	25,000	6,940	14,000	2,500	5,640	0	06	95/	0	9		0	095	0	9	750	10,080		0	0											
ype-2	1.0 km	Amount	207,423	4,680,000	14,043	24,592,500	360,000	2,311,020	9,660,000	1,577,500	2,724,000	0	566,280	1,001,900	0	242,184	0	0	2,349,000	0	30,000	381,000	1,244,240	0	0	670,000	-	5,261,109	2,893,610	607,658			61.373.467	6,137,347	67,510,814		67,510,814
Urban Type-2	Length	Quantity	39,000	39,000	151	98,370	30,000	6,940	14,000	2,500	6,000	0	86	098	0	<u> 1</u> 9	0	0	009	0	9	750	12,080		0	6,700										:	
ype-1	1.0 km	Amount	255,290	5,760,000	17,670	27,891,500	576,000	2,853,810	000'099'6	8,518,500	2,560,560	1,166,528	772,200	1,141,700	3,600,000	242,184	0	378,400	2,192,400	360,000	30,000	381,000	1,246,300		1,000,000	0		7,060,404	3,883,222	815,477			82,363,145	8,236,314	90,599,459		90,599,459
Urban Type-1	Length =	Quantity	48,000	48,000	190	111,566	48,000	8,570	14,000	13,500	5,640	22	135	086	2,000	9	0	172	260	88	မှ	750	12,100		1,000.00	•											
	Unit Price		5.32	120.00	93.00	250.00	12.00	333.00	00.069	631.00	454.00	53,024,00	5,720.00	1,165.00	1,800.00	40,364.00	1,780.00	2,200.00	3,915.00	1,800.00	5,000.00	508.00	103.00		1,000.00	100:00		***			11 12						
	Cait		SQ. m.	CU.M	Su. Fl	G.B.	m.ps	cu.m.	SQ.m.	Sq.m.	Sq.m.	 E.	.E.	m.	<u>ء</u>	each	cu.m.	cu.m.	S. H.	l.m.	each	sq.m.	Sq.m.		each	each									:		
	Description	•	Clearing and Grubbing	Excavation of Unsuitable Soils	Pipe Culverts and Drain Excavation	Embankment from Borrow	Subgrade Preparation	Aggregate Sub-base course	PCC t=25cm	PCC t=23cm	PCC t=18cm	RCBC (2-3.00 m x 2.50 m)	RCCP - 1220mm diameter	RCCP-460mm diameter	Side Ditch(300x300)	inlet/Outlet RCPC,1220 m dia.	Grouted Riprap Class "A"	Stone Masonry (supported type)	Curb and Gutter	Guardrail Metal Beam	Road signs	Reflective Pavement Markings (white)	Sodding	Tree Planting	Large size	Small size		Miscellaneous Structures (10%)	Facility & Laboratory (5%)	Mobilization & Demobilization (1%)			Construction Cost	Contingencies (10%)	Sub-Total		Total Cost per km
	Item No.		95	102	103(6)	104	105					407.1(b)		200g	501a	502		505		603(3)	605	606(1)	610	611													•-

APPENDIX 10.2-1 ANNUAL DISBURSEMENT SCHEDULE FOR ALTERNATIVE ROUTES OF ALL BYPASS ROUTES (FINANCIAL PRICE)

				0000			5000	ľ		2000			2000			100)
Name of Bypass	Route Atternative	Work Item	F.C.	3	Sub-Total	S S		Sub-Total	S.) ()	Sub-Total	S H	207	Sub-Total	n C	 S 0	Total
O period	, 0000 d																
right of	- - - - - - - - - - - - - - - - - - -	I Land Acquisition		0	0	1	0.070	0.000					Ť			0.55	0,000
ದಿಕ್ಕಾಲಕ್ಕರ		(1) Right of Way Acquisition	Ť	312.0	2		0.715	0.250							5	0.4	0.470
	:	(2) Compensation		0.0	0 0	0	0.0	9			1			Ì	0	.50	:20
		Sub-Total		318.0	318.0	0.0	318.0	318.0							0.0	636.01	636 0
		2. Detailed Design	6.96	58.1	155.0	10.8	6.5	17.2						_	107 6	646	172.2
•		3. Construction				204 4	122.6	327.0	318.3	4913	1,310.0	818.8	2,167	1,310.0	1,8419	1,105.1	2,947.0
		Total	6.96	376.1	473.0	215.1	447.1	662.2	818.8	491.3	1,310.0	818.8	491.3	1,310.0	1,949.5	1,805 7	3,755.2
	Route-2	1 Land Acquisition															
	<u>. </u>	(1) Right of Way Acquisition		351.0	351.0		351.0	351.0							0.0	702.01	702.0
		(2) Compensation		9.0	9.0	0.0	9.0	9.0						-	00	9. O	18.0
		Sub-Total		360.0	360.0	0.0	360.0	360.0							00	720.0	720.0
		2 Detailed Design	96.6	52.0	138.6	9.6	5.8	15.4						~-	96.3	57.8	154.0
		3. Construction				183.8	110.3	294.0	734.7	440.8	1,175.5	7:24.7	440.8	1,175.5	1,653.1	991.9	2,645.0
		Total	96.E	412.0	498.6	193.4	476.0	669.4	734.7	440.8	1,175.5	7.34.7	440.8	1,175.5	1,749.4	1,769.6	3,519.0
	Route-3	1. Land Acquisition															
		(1) Right of Way Acquisition		392.0	392.0		392.0	392.0				_			0.0	784.0	784.0
		(2) Compensation		12.5	12.5	0.0	12.5	12.5							0.0	25.0	25.0
		Sub-Total		404.5	404.5	0.0	404.5	404.5				-			0.0	809.0	809.0
		2. Detailed Design	78.8	47.3	126.0	8.8	5.3	14.0							87.5	52.5	140.0
		3. Construction				166.9	100.1	267.0	6.999	400.1	1,067.0	6.999	400.1	1,067.0	1,500.6	7 006	2,401.0
		Total	78.8	451.8	530.5	175.6	509.9	685.5	6.999	400.1	1,067.0	6.999	400.1	1,067.0	1,588.1	1,761.9	3,350.0
1	Route-4	1 Land Acquisition									-						0.0
		(1) Right of Way Acquisition		146.5	146.5		146.5	146.5						·• ~	0.0	293.0	293.0
		(2) Compensation		00	9.0	8	0.6	0.6							0	18.0	18.0
		Sub-Total		155.5	155.5	0.0	155.5	155.5							00	3110	3110
		2. Detailed Design	55.1	33.1	88.2	6.1	3.7	9.0							61.3	36.8	98.0
		3. Construction				116.9	70.1	187.0	473.1	283.9	757.0	473.1	283.9	757.0	1,063.1	637.9	1,701.0
		Totaí	55.1	188.6	243.7	123.0	229.3	352.3	473.1	283.9	757.0	473.1	283.9	757.0	1,1244	985.6	2,110.0
Cabanatuan Route-1	Route-1	1. Land Acquisition									-						0.0
		(1) Right of Way Acquisition		147.0	147.0		147.0	147.0	i i	-	‡				00	294.0	294.0
- - -		(2) Compensation		12.0	12.0	0.0	12.0	12.0							0.0	240	24.0
		Sub-Total		159.0	159.0	0.0	159.0	159.0	-						0.0	3.80	318.0
	:	2. Detailed Design	125.4	75.3	200.7	13.9	8.4	22.3						_	139.4	83.6	223.0
		3. Construction				266.3	159.8	426.0	1.064.7	638.8	1,703.5	1,064.7	638.8	1,703 5	2,395.6	1,437.4	3,833.0
		Total	125.4	234.3	359.7	280.2	327.1	607.3	1,064.7	638.8	1,703.5	1,964.7	638.8	1,703.5	2,535.0	1,839.0	4.374.0
	Route-2	1. Land Acquisition															0.0
		(1) Right of Way Acquisition		161.0	161.0		161.0	161.0		_		;			0.0	322.0	322.0
		(2) Compensation		15.5	15.5	0.0	15.5	15.5							0.0	310	3.0
		Sub-Total	.	176.5	176.5	0.0	.76.5	176.5							0.0	353.0	353.0
		2 Detailed Design	9.66	59.7	159.3	11.1	6.6	17.7							110 6	7 99	27.0
		3 Construction	!			2113	126.8	338.0	845.6	507.4	1,3530	8456	507.4	1,353.0	1,902.5		3 044 0
		Total	9 65	236.2	335.8	222.3	309.9	532.2	8456	507.4	1,353.0	845.61	507 4	1 353 0	2 013 1	1 560 91	3 574 0

APPENDIX 10.2-2 CASH FLOW OF ECONOMIC COST AND BENEFIT FOR ROUTE-2 OF ALL BYPASS ALTERNATIVES

(Unit: Million Pesos)

				Cock				lion Pesos)
No.	Year	Detailed	Construction	Cost Land	O&M Cost	Total	Benefit	Not Donatt
·		Design	Ooristraction	Aquisition	Odw Cost	Total	benent	Net Benefit
-4	2001	290		503		793	0	-793
-3	2002	32	614	503		1,150	0	-1,150
-2	2003		2,458			2,458	0	-2,458
-1	2004		2,458			2,458	0	-2,458
1	2005				277	277	2,983	2,707
2	2006				277	277	3,282	3,006
3	2007				277	277	3,581	3,304
4	2008				277	277	3,880	3,603
5	2009				277	277	4,178	3,902
6	2010				277	277	1,852	1,575
7	2011				277	277	2,235	1,959
8	2012				277	277	2,619	2,342
9	2013				277	277	3,002	2,726
10	2014				277	277	3,386	3,109
11	2015				277	277	3,769	3,493
12	2016				277	277	4,153	3,876
13	2017				277	277	4,536	4,260
14	2018		[277	277	4,920	4,643
15	2019		1		277	277	5,304	5,027
16	2020				277	277	7,221	6,945
17	2021				277	277	7,221	6,945
18	2022				277	277	7,221	6,945
19	2023		1		277	277	7,221	6,945
20	2024				277	277	7,221	6,945
	Total	322	5,531	1,007	5,531	12,390	89,787	77,397

EIRR = 31.85% (Discount Rate 15%) B/C = 2.32 NPV = 7,328

APPENDIX 10.2-3 ANNUAL DISBURSEMENT SCHEDULE FOR ALTERNATIVE ROUTES OF ALL BYPASS ROUTE (FINANCIAL PRICE)

													4 000			g. 0_	
				2001			2002			2003		ŀ	2004		}		
Name of Byoass	Alternative	Work Item	n O	O I	Sub-Total	n O	LC.	Sub-Total	F.C.	S	Sub-Total	n Q	r.c	Sub-Total	D H	o i	Total
2)		_				-		-	-								00
Cabanatuan Route-3	Rocte-3	1. Land Acquisition			Ť;			1	-		-				a a	291.0	291.0
		(1) Right of Way Acquisition		145.5	145.5		145.0	145.5			-		1		100	26.0	20,50
		(2) Compensation		12.5	12.5	00	12.5	12.5	- [-	+		†		3	2 0
		eto Tate o		158.0	158.0	0.0	158.0	158.0	-			-			0	316.0	0.0
			83.3	60.0	133.2	0.3	5.6	14.8							92.5	\$5.5	1680
_		Z Detailed Design				176.3		282.0	704.4	422.6	1,127.0	704 4	422.6	1,127,0	1,585.0	951.0	2,536.0
		3. Construction		0000	201.2	486.6	269.3	454.8	704 4	422 6	1,127.0	704.4	422.6	1,127.0	1,677.5	1,322.5	3,000.0
		Total	2	2000	42.62	5.00	2.00	7									0.0
	Route-4	1. Land Acquisition			1		+	1							C	C 88.	1880
		(1) Right of Way Acquisition		94.0	94.0		94.0	94.0			-				2	3	3
		(2) Companyation		12.5	12.5	0.0	12.5	12.5							000	25.0	0 57
		C. W. Tetal		5	106.5	0	106.5	106.5							00	213.0	213.0
		000-1019	1 10	200	100		4.3	14	-						71.3	42.8	1140
		2. Detailed Design	5	200	2	135 B		217.0	241.6	324.9	866.5	541.6	324.9	866.5	1,218.8	731.3	1.950.0
		3 Construction	,	4				3240	4.73	324 9	298	5416	324.9		1,290.0	987.0	2,277.0
	_	Total	6.4	145.0	ZOS	147.0	37.76	0.400	3	2							00
San Jose	Route-1	1, Land Acquisition							1			†			Č	320	30.0
		(1) Right of Way Acquisition	_	16.0	16.0		16.01	16.0							5	0.40	7
		(0) Composes (0)		30	3.0	0.0	3.0	3.0							0.0	6.0	6.0
		C. T. C.		000	0 61	00	19.0	19.0							0	380	38.0
-			41.8	,	8,0	-	0.8	2						~ -	13.1	7.9	2,0
		C Detailed Design	2			25.4		40.6	101.4	60.8	162.2	101,4	60.8	162.2	228.1	136.9	365 0
		Total	11.8	26.1	37.9	26.7	35.0	61.7	101.4	60.8		101.4	80.8	162.2	241.3	182.8	424.0
	2	A Committee Accountages															00
	ייםוחסט -			25.	3.5.		13.5	13.5							0.0	27.0	27.0
		(1) Right of vydy Acquisition		0	0	0	0	6	-						0	12.0	12.0
	_	(2) Compensation		9	20	2	2	5 9	1						000	39.0	39.0
		Sub-Total		19.5	19.5	0.0	19.5	C.A.	1			T			2 6		44.0
		2. Detailed Design	9.6	5.7	15.3	1,1	9.0	1.7	1						0 0	200	
		3. Construction				20,1	12.1	32.2	80.6	48.3		80.6	5.54	İ	101	100.0	300
		Total	9.6	25.2	34.8	21.2	32.2	53.4	30.6	48.3	128.9	80 8	483	128 9	191 9	156	346 0

APPENDIX 10.2-4 ANNUAL DISBURSEMENT SCHEDULE FOR ALTERNATIVE ROUTES OF ALL BYPASS ROUTE (ECONOMIC PRICE)

Plandel Plandel Route-1 1 Land Acquisition Balluag (2) Compensation (3) Construction Total Route-2 1 Land Acquisition (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (1) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (1) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (1) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (1) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (1) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (1) Right of Way Acquisition (1) Right of Way Acquisition (2) Compensation (3) Construction (4) Right of Way Acquisition (5) Compensation (6) Compensation (7) Right of Way Acquisition (8) Compensation (9) Compensation (9) Compensation (1) Right of Way Acquisition (2) Compensation (3) Compensation (4) Right of Way Acquisition (5) Compensation (6) Compensation	E C		Sub-Total					ſ		ر	(1040 H	O U	0 -	Total
Route-1 Route-3 Route-4 Route-1 Route-2		_)	ر ن	Sub-Total	n O	L C	Sub-Total		7	Suo-Total			10101
Route-3 Route-4 Route-1 Route-2											1			1	
Route-2 Route-1 Route-1 Route-2		280.8	280.8		280 B	280 8	-				-1		0.0	567 6	3619
		60	0.9	0.0	6.0	6.0	_						00	12.0	12.0
		286 8	286.8	00	286.8	286.8						į	00	5736	573 6
	96.9		143.4	80.	52	15 9				~-	~		107 6	51.7	1593
				204.4	38.1	302.5	818.8	393.0	1,211.8	8188	393.0	1,211.8	1,841.9	884 1	2,726.0
	96.9	333.3	430.2	215.1	390.1	605.2	818.8	393.0	1,211.8	8188	393.0	1,211.8	1.949.5	1.509.4	3,458.9
														i	
	5	315.9	315.9		315.9	315.9				- +			0.0	631.8	631.8
		0.6	9.0	00	0.6	9.0							00	18.0	13.0
		324 9	324.9	0.0	324 9	324.9							0.0	649.8	649.8
	86.6	41	128.2	9.6	46	14.2							96.3	46.2)	142.5
				183.8	88.2	272.0	734.7	352.7	1,087.3	734.7	352.7	1,087.3	1,653,1	793.5	2,440.6
	86.6	366.5	453.1	193.4	417.7	611.1	734.7	352.7	1,087.3	734.7	352.7	1,087.3	1,749.4	1 489 5	3,238.9
	6	352.8	352.8		352.8	352.8							0.0	705.6	705.6
		12.5	12.5	00	12.5	12.5							0.0	25.0	28.0
		365.3	365.3	00	365.3	365.3							0.0	730.6	730.6
	78.8	3.7	116.6	80	4.2	13.0							87.5	42.0	129.5
				1669	90 1	247.0	666.9	320.1	987.0	6.999	320.1	987.0	1,500.5	720.3	2,220.9
	78.8	403 1	481.9	175.6	449.6	625.2	6.999	320.1	987.0	6999	320.1	987.0	1,588.1	1.492.9	3,081.0
															0.0
		131.9	131.9		131.9	131.9							0.0	263.7	263.7
		0.6	0.6	0.0	0.6	0.6							0.0	18.0	180
		1409	140.9	00	140.9	140.9					•		00	281.7	281.7
	55.1	26.5	81.6	6.1	2.9	6							61.3	29.4	8
				116.9	56.1	173.0	473.1	227.1	700.2	473.1	227.1	700.2	1,063.1	510.3	1,573.4
	55.1	167.3	222.4	123.0	139.9	322.9	. 473,1	227.1	700.2	473.1	227.1	700.2	1,124.4	\$27.4	1,945.8
															0.0
	U.S	132.3	132.3		132.3	132.3							0.0	264.6	264.6
		12.0	12.0	00	12.0	12.0							00	24.0	24.0
		144.3	144.3	0.0	144.3	144.3	;						0.0	288.6	288.6
	125.4	60.2	185.6	13.9	6.7	20.6							139.4	699	205.3
				266.3	127.8	394.1	1,064.7	511.1	1,575.7	1,064.7	511 1	1,575.7	2,395.6	1,149.9	3,545.5
	125.4	204.5	329.9	280.2	278.8	559.0	1,064.7	511.1	1,575.7	1,064.7	511.1	1.575.7	2,535.0	1,505.4	4,040,4
•															00
	6	144.9	144.9	-	144 9	144.9							0.0	2898	289.8
(2) Compensation		15.5	15.5	00	15.5	15.5					-		00	310	310
Sub-Total		160.4	160.4	0.0	160.4	160.4					-		0.0	320.8	320.8
2. Detailed Design	9.66	8.74	147.4	111	5.3	16.4							1.06	53.1	163.7
3. Construction				211.3	101.4	312.7	845.6	405.9	1,251.5	845.6	405.9	1,251	1,902 5	913.2	2,815.7
70191	3 66	208.2	307.8	222.3	267 1	489.4	845.6	405.9		845.6	405.9		2,013.1	1,287.1	3,300.2

APPENDIX 10.2-4 ANNUAL DISBURSEMENT SCHEDULE FOR ALTERNATIVE ROUTES OF ALL BYPASS ROUTE (ECONOMIC PRICE)

													1000			10.01	
,				2001			2002						.			ieno)	
Name of Bypass	Alternative	Work Item	J.	, C	Sub-Total	F.C.		Sub-Total	ပ ပ	CC	Sub-Total	S U	ပ	Sup-Total	U.	٥	Total
Cabanatuan Route-3	Route-3	1. Land Acquisition						-									-
		(1) Right of Way Acquisition		131.0	131.0		131.0	131.0					,		0	2619	2619
-		(9) Composestion			12.5	0.0	12.5	12.5						-	0.0	25.0	25.0
		Sub-Total		143.5	143.5		143.5	143.5				-			000	286.9	286.9
		2 Detailed Design	83.3	40.0	123.2		4 4	13.7							92.5	44.4	136.9
		2 Constantion				176.3	846	260.9	704 4	338.1	1,042.5	704.4	338.1	1,042.5	1,585.0	760.8	2,345.8
		Total	83.3	183.4	266.7	185.5	232.5	418.0	704.4	338.1	1,042.5	704 4	338.1	1,042.5	1,677.5	1.092 1	2,769.6
	Route-4	1 Land Acquisition															0.0
		(1) Right of Way Acquisition		846	84.6		84.6	84.6							00	169.2	169.2
		(2) Compensation		12.5	12.5	0.0	12.5	12.5							0.0	25.0	25.0
		Sub-Total		97.1	97.1	0.0	97.1	: 26					_		0.0	194.2	194.2
		2 Detailed Design	64.1	30.8	94.9	7.1	3.4	10.5							71.3	32.2	105.5
		3 Construction	 			135.6	65.1	200.7	541.6	260.0	301.5	541.6	250.0	801.5	1,218.8	585.0	1,803.8
		Total	64.1	127.9	192.0	142.8	165.6	308,4	541.6	260.0	801.5	541.6	260.0	801.5	1,290.0	913.4	2,103.4
0.0	0.00	A Pood Accinetion				-										_	0.0
acon upo	1000	(1) Broth of Wav Acquisition		14.4	14.4		14.4	144							0 0	28.8	28.8
		(2) Compensation		3.0	3.0	0.0	3.0	3.0							0.0	0.9	0.9
		Sub-Total		17.4	17.4	0.0	17.4	17.4							00	32.8	3.8
		2 Detailed Design	11.8	5.7	17.5	1.3	9.0	1.9							13.1	6.3	19.4
		3. Construction				25.4	12.2	37.6	101.4	48.7	150.0	101.4	48.7	150.0	228.1	109.5	337.6
		Total	11.8	23.1	34.9	26.7	30.2	56.9	101.4	48.7	150.0	101.4	48.7	150.0	2413	150.6	391.9
	Route-2	1 Land Acquisition												-			0.0
		(1) Right of Way Acquisition		12.2	12.2		12.2	12.2							00	24.3	24.3
		(2) Compensation		6.0	0.9	0.0	6.0	6.0							00	12.0	12.0
		Sub-Total		18.2	18.2	00	18.2	19.2							0.0	36.3	36.3
		2 Detailed Design	9.6	4.6	14.2	¥.	0.5	1.6							10.6	5.1	15.7
		3 Construction				20 1	5.6	29.8	80.6	38.7	119.2	80.5	38.7	119.2	1813	87.0	268.3
		Total	9.6	22.7	32.3	21.2	28.3	49.5	80.6	38.7	119.2	80.6	38.7	119.2	1919	128.4	3203

APPENDIX 10.3-1 INITIAL ENVIRONMENTAL IMPACT ASSESSMENT

In terms of negative or adverse impacts:

- (i) 0 No impact
- (ii) Low Impact is not significant
- (iii) Medium Impact is moderate and significant but can be mitigated
- (iv) High Impact is high, can be mitigated, but with residual adverse impacts

In terms of positive impacts:

- (i) 0 No Impact
- (ii) Low Impact is not significant
- (iii) Medium Impact is moderate and significant but needs enhancement to be sustained
- (iv) High Impact will definitely contribute to the betterment of the recipient environment

Impact assessment of the alternative routes for the Planidel-Baliugo Bypass

Plaridel-Baliuag Byr	ass			
		Alternal	ive Routes	
IMPACTS	1	2	3	4
Air Quality and Noise Levels Increase in dust particles, gaseou	is emissions and nois	e levels at bypa	ss construction	area
Construction Phase				
Туре	(-)	(-)	(-)	(-)
Intensity	medium	medium	medium	medium
Duration	short term	short term	short term	short term
Operational Phase				
type	(-)	(-)	(-)	(·)
intensity	low	low	low	low
duration	long term	long term	long term	long term
Decrease in gaseous emissions as a result of through traffic diver	sion to new bypass	1	T	1
Operational Phase				<u> </u>
lype	(+)	(+)	(+)	(+)
intensity	high	medium	medium	low
duration	long term	long term	long term	long term
Biological aspects Loss of vegetation and wildlife ha	ibitat			
Construction Phase		· ·		
type	(-)	(-)	(-)	(-)
intensity	low	low	low	medium
duration	long term	long term	long term	long term
Historical Markers and Protect Loss of or damage to Historical I	ed areas Markers and Protected	areas		
Construction Phase				
type	0 (?)	0 (?)	0 (?)	0 (?)
intensity	n.a.	n.a.	n.a.	n.a.
duration	n.a.	n.a.	n.a.	n.a.
Socioeconomic aspects				
Construction Phase				
Displacement of communitie	es			
type	(-)	(-)	(-)	(-)

Impact assessment of the alternative routes for the Plaridel-Balluag Bypass (Continued)

		Alternati	ve Routes	
IMPACTS	1	2	3	4
intensity	medium	medium	medium	low
duration	long term	long term	long term	long term
Disruption of commercial ac	tivities	<u></u>		
type	(•)	(-)	(-)	(-)
intensity	medium	medium	medium	low
duration	short term	short term	short term	short term
Public inconvenience due to	construction activities			
type	(-)	(-)	(-)	(-)
intensity	high	medium	medium	low
duration	short term	short term	short term	short term
Generation of employment	(at construction site)			
type	(+)	(+)	(+)	(+)
Intensity	medium	high	hìgh	low
duration	short term	short term	short term	short term
Operational Phase				
Decrease in income of com	mercial establishments	along Pan-Phili	ppine Highway	
type	(-)	(-)	(-)	(-)
intensity	medium	medium	medium	medium
duration	long term	long term	long term	long term
More efficient delivery of g	oods (rice, com, petrole	um, etc.)		
type	(+)	(+)	(+)	(+)
intensity	medium	high	medium	medium
duration	long term	long term	long term	long term
Faster, safer travel for thro	ugh-traffic vehicles			
type	(+)	(+)	(+)	(+)
inlensity	medium	high	medium	medium
duration	long term	long term	long term	iong term
Land Usa Maria H. T.				
Operational Phase				
Potential loss of productive	e agricultural land due t	o conversion to	non-agricultural	use
type	(-)	(-)	(-)	(-)
intensity	low	low	low	high
duration	long term	long term	long term	long term
OVERALL RANKING	3'4		2 nd	489

Impact assessment of the alternative routes for the Plaridel-Baliuag Bypass (Continued)

		Alternativ	e Koutes	·r
IMPACTS	1	2	3	4
intensity	medium	medium	med um	low
duration	long term	long term	long term	long term
Disruption of commercial activit	ies			
tyne	(-)	(-)	(-)	(-)
intensity	medium	medium	medium	low
duration	short term	short term	short term	short term
Public inconvenience due to co	nstruction activities			
type	(-)	(-)	(-)	(-)
intensity	high	medium	medium	low
duration	short term	short term	short term	short term
Generation of employment (at	construction site)			
type	(+)	(+)	(+)	(+)
intensity	medium	high	high	low
duration	short term	short term	short term	short term
Operational Phase			• . • · · · · · · · · · · · · · · · · ·	
Decrease in income of comme	rcial establishments	along Pan-Philip	pine Highway	
type	(-)	(-)	(·)	(•)
intensity	medium	medium	medium	medium
duration	long term	long term	long term	long term
More efficient delivery of good	s (rice, corn, petrole	um, etc.)		
type	(+)	(+)	(+)	(+)
intensity	medium	high	medium	medium
duration	long term	long term	long term	long term
Faster, safer travel for through	-traffic vehicles			
type	(+)	(+)	(+)	(+)
intensity	medium	high	medium	medium
duration	long term	long term	long term	long term
Land Use				
Operational Phase				
Potential loss of productive ag	ricultural land due to	o conversion to n	on-agricultural	use
type	(-)	(-)	(-)	(-)
intensity	low	low	low	high
duration	long term	long term	long term	long term
OVERALL RANKING	3'5	13.45.2	2 nd	4"
Note:				

Impact asse Cabanatuan Bypass	essment of th	e alternati	ve routes	for the
		Alternati	ve Routes	
IMPACTS	1	2	3	4
icogality and Noise Levels 🕏			s construction a	
Construction Phase			<u> </u>	<u> </u>
type	(-)	(-)	(-)	(-)
intensity	low	low	low	medium
duration	short term	short term	short term	short term
Operational Phase		<u> </u>		
type	(•)	(-)	(-)	(-)
intensity	low	low	low	medium
duration	long term	long term	long term	long term
Decrease in gaseous emissions as a result of through traffic dive	and noise levels along raion to new bypass	the Pan-Philipp	ine Highway	
Operational Phase				
type	(+)	(+)	(+)	(+)
intensity	low	high	high	medium
duration	long term	long term	long term	long term
Biological Espata (cocation and Wallis	त्रिकारी विश्व			
Construction Phase				
type	(-)	(-)	(-)	(-)
intensity	high	low	low	low
duration	long term	long term	long term	long term
Historical Markers and Prote Loss of or damage to historical	ted areas Spots and Protected as		* * * * * * * * * * * * * * * * * * *	
Construction Phase				
type	0 (7)	0 (?)	0 (?)	0 (3)
intensity	n.a.	n.a.	n.a.	n.a.
duration	n.a.	n.a.	n.a.	n.a.
Socioeconomic			U 7-5 6	2.14
Construction Phase				
				-
Displacement of communi	ties			
Displacement of communi	ties (-)	(-)	(-)	(-)

Impact	assessment	of	the	alternative	routes	for	the
Cabanatuan 8	Bypass						

		Alternati	ve Routes	
IMPACTS	1	2	3	4
Air Quality and Noise Levels norease in dust particles; gaseou	s emissions and noise	levels at bypas	s construction a	rea
Construction Phase			ļ	
type	(-)	(·)	(-)	(-)
intensity	low	low	low	medium
duration	short term	short term	short term	short term
Operational Phase		<u> </u>		
type	(-)	(-)	(-)	(-)
intensity	low	low	low	med:um
duration	long term	long term	long term	long term
Decrease in gaseous emissions as a result of through traffic diver	and noise levels along sion to new bypass	the Pan-Phitipp	ine Highway	
Operational Phase				_
type	(+)	(+)	(+)	(+)
intensity	low	high	high	medium
duration	long term	tong term	long term	long term
Biological Loss of vegetation and wildlife h Construction Phase	abitat 1			
1ype	(-)	(-)	(-)	(-)
intensity	high	low	iow	low
duration	long term	long term	long term	long term
Historical Markers and Protec Loss of or damage to historical	ted areas spots and Protected ar	eas		
Construction Phase				
type	0 (?)	0 (?)	0 (?)	0 (?)
intensity	n.a.	na.	n.a.	U. 9.
duration	n.a.	n.a.	n a.	n.a.
Socioeconomic			. 14 5 35 11 21 10 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	
Construction Phase				
Displacement of communit	ies	· · · · · · · · · · · · · · · · · · ·		
Туре	(-)	(-)	(-)	(-)
Intensity	high	medium	medium	high

Impact assessment of the alternative routes for the Cabanatuan Bypass (Continued)

		Alternati	ve Roules	 -
IMPACTS	S	2	3	4
Duration	long term	long term	long term	long term
Disruption of commercial ac	tivities			
Туре	(-)	(-)	(•)	(-)
Intensity	low	low	medium	wol
Duration	short term	short term	short term	short term
Public inconvenience due to	construction activities			<u>.</u>
Туре	(-)	(-)	(•)	(-)
intensity	low	low	medium	medium
duration	short term	short term	short term	short term
Generation of employment	(at construction site)			
type	(+)	(+)	(+)	(+)
intensity	low	hìgh	high	high
duration	short term	short term	short term	short term
Operational Phase				
Decrease in income of com	mercial establishments	along Pan-Phili	ppine Highway	
type	(-)	(-)	(-)	(-)
intensity	low	medium	medium	low
duration	long term	long term	long term	long term
More efficient delivery of go	ods (rice, com, petrole	um, etc.)		
type	(+)	(+)	(+)	(+)
intensity	medium	high	medium	medium
duration	long term	long term	long term	long term
Faster, safer travel for thro	ugh-traffic vehicles			
type	(+)	(+)	(+)	(+)
intensity	medium	high	high	medium
duration	long term	long term	long term	long term
Pand Use of Sales	表对位于特定	Sec. Will	和初期	
Operational Phase				
Potential loss of productive	agricultural land due to	conversion to r	on-agricultural	use
type	(-)	(-)	(-)	(-)
intensity	low	medium	low	high
duration	long term	long term	long term	long term
VERALL RANKING	3 rd		2 nd	4 th
Note:				

Impact assessment of the alternative routes for the Cabanatuan Bypass (Continued)

IMPACTS Duration Disruption of commercial activities Type	long term	2 long term	3	4
Disruption of commercial activities	long term	long term		
		1	long term	long term
Туре				
	(-)	(-)	(-)	(-)
Intensity	low	low	medium	low
Duration	short term	short term	short term	short term
Public inconvenience due to constr	uction activities	• *		.,
Туре	(-)	(-)	(-)	(-)
intensity	low	low	medium	medium
duration	short term	short term	short term	short term
Generation of employment (at cons	struction site)			
type	(+)	(+)	(+)	(+)
intensity	low	high	high	high
duration	short term	short term	short term	short term
Operational Phase				
Decrease in income of commercia	l establishments	along Pan-Philipp	ine Highway	
type	(-)	{-)	(·)	
intensity	low	medium	medium	fow
duration	long term	long term	long term	long term
More efficient delivery of goods (ric	ce, corn, petrolei	im, etc.)		
type	(+)	(+)	(+)	(+)
intensity	medium	high	medium	medium
duration	long term	long term	long term	long term
Faster, safer travel for through-tra	ffic vehicles			
type	(+)	(+)	(+)	(+)
intensity	medium	high	high	medium
duration	long term	long term	long term	long term
Land Use				
Operational Phase				
Potential loss of productive agricu	ltural land due to	conversion to no	n-agricultural t	ıse
type	(-)	(·)	(-)	(-)
intensity	low	medium	low	high
duration	long term	long term	long term	long term
VERALL RANKING	3'd		2 nd	4"

Impact assessment of the alternative routes for the San Jose Bypass

San Jose Bypass		
IMPACTS	Alternat	ive Routes
	1	2
AISQUEITY-TRANCISOLEVALS docrease-intelletyparticles, gaseou Ngassyonsinucubia area	s emissions end los	
Construction Phase		
type	(-)	(•)
intensity	low	medium
duration	short term	short term
Operational Phase		
type	(-)	(-)
intensity	fow	low
duration	long term	long term
Decrease in gaseous emissions a Philippine Highway as a result of to bypass	ind noise levels along through traffic diversio	the Pan- on to new
Operational Phase		
type	(+)	(+)
intensity	high	high
duration	long term	long term
Biological Coss of vegetation and wildlifethal Construction Phase		
type	(-)	(-)
intensity	medium	low
duration	long term	long term
Historical Markers and Protects US\$ of or damage to historical s		
Construction Phase	1.	
type	0 (?)	0 (?)
intensity	n a.	n.a.
duration	n.a.	n.a.
→ Socioeconomic		ESTANCE.
Construction Phase		
Displacement of communities	s ***	
type	(-)	(-)
intensity	low	medium
duration	long term	long term
Disruption of commercial act	ivities	
type	(-)	(-)
· · · · · · · · · · · · · · · · · · ·		

Impact assessment of the alternative routes for the San Jose Bypass

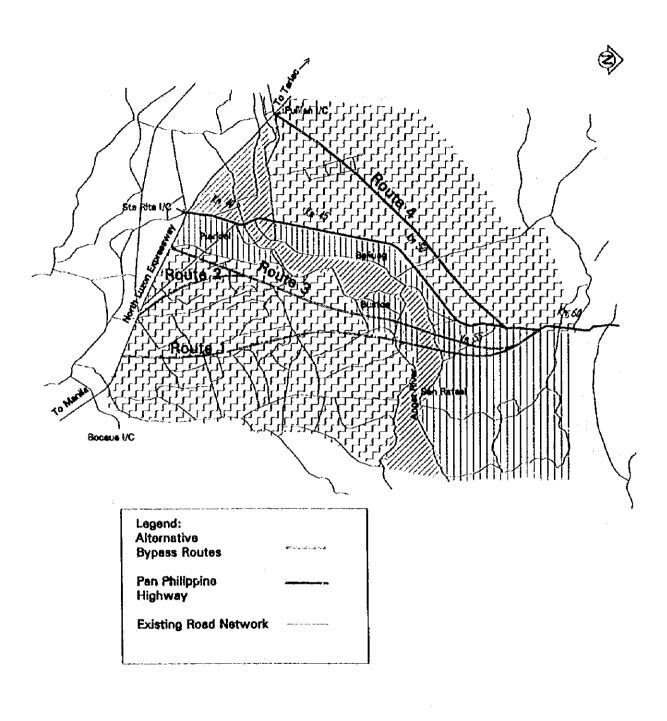
IMPACTS Alternat		ive Routes
	1	2
Air Quality and Noise Levels nocease in dust particles, gaseous emis pypass construction area	slons and nois	e levels at
Construction Phase		
type	(-)	(-)
intensity	low	medium
duration	short term	short terrn
Operational Phase		
type	(-)	(-)
intensity	low	fow
duration	long term	long term
Decrease in gaseous emissions and no Philippine Highway as a result of throug bypass		
Operational Phase	1	4.5
type	(+)	(+)
intensity duration	high	high
Biological Loss of vegetation and widdle habitat		long term
Construction Phase		
type	(-)	(-)
intensity	medium	low
duration	long term	long term
Historical Markers and Protected are Loss of or damage to historical spots a	as id Protected ar	as i
Construction Phase		
type	0 (?)	0 (?)
intensity	n.a.	n.a.
duration	na.	n.a.
Socioeconomic		
Construction Phase		
Displacement of communities		
type	(-)	{-}
intensity	low	medium
duration	long term	long term
Disruption of commercial activities		

Impact assessment of the alternative routes for the San Jose Bypass (Continued)

IMPACTS	Alternati	ve Routes
	1	2
intensity	medium	low
duration	short term	short term
Public Inconvenience due t	o construction activities	
type	(·)	(-)
intensity	low	medium
duration	short term	short term
Generation of employment	(at construction site)	
type	(+)	(+)
inlensity	medium	high
duration	short term	short term
Operational Phase		
Decrease in income of cor Philippine Highway	mmercial establishments	along Pan-
type	(-)	(-)
intensity	medium	medium
duration	long term	long term
More efficient delivery of g	joods (rice, corn, petrole	um, etc.)
type	(~)	(+)
intensity	high	high
duration	long term	long term
Faster, safer travel for thre	ough-traffic vehicles	
type	(+)	(+)
intensity	high	high
duration	long term	long term
Band Use	HERE A STREET	
Operational Phase		
Potential loss of productive non-agricultural use	ve agricultural land due to	conversion to
type	(-)	(-)
77	high	low
intensity		
	long term	long term
intensity		long term

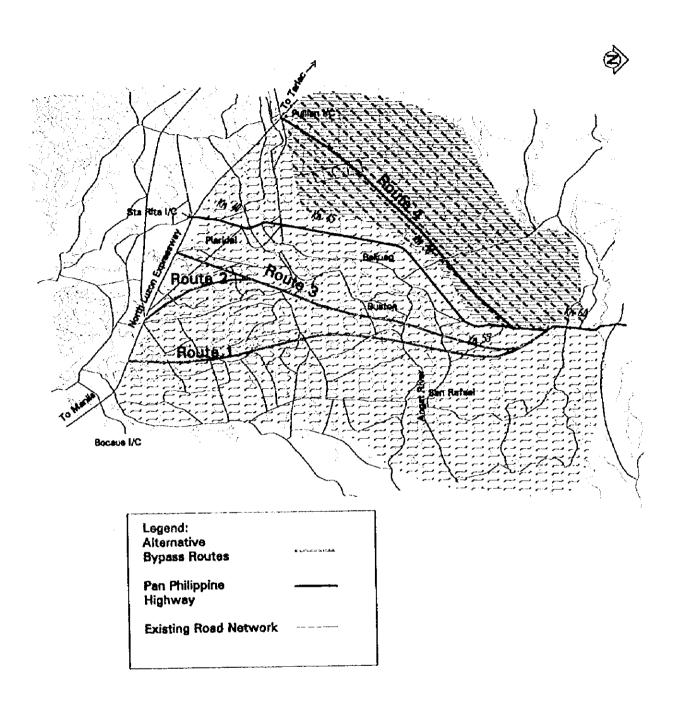
Impact assessment of the alternative routes for the San Jose Bypass (Continued)

IMPACTS	Alternat	ive Routes
	1	2
intensity	medium	low
duration	short term	short term
Public inconvenience due to	construction activities	
type	(-)	(-)
intensity	low	medium
duration	short term	short term
Generation of employment	(at construction site)	
type	(+)	(+)
intensity	medium	high
duration	short term	short term
Operational Phase		
Decrease in income of com Philippine Highway	nmercial establishments	along Pan-
type	(-)	(-)
intensity	medium	med-um
duration	long term	long term
More efficient delivery of go	oods (rice, corn, petrole	urn, etc.)
type	(+)	(+)
intensity	high	high
duration	long term	long term
Faster, safer travel for thro	ugh-traffic vehicles	
Туре	(+)	(+)
intensity	high	high
duration	long term	long term
Land Use		
Operational Phase		<u> </u>
Potential loss of productive non-agricultural use	e agricultural land due t	o conversion to
type	(-)	(-)
intensity	high	low
Duration	long term	long term
OVERALL RANKING	2nd	1st
Note:		



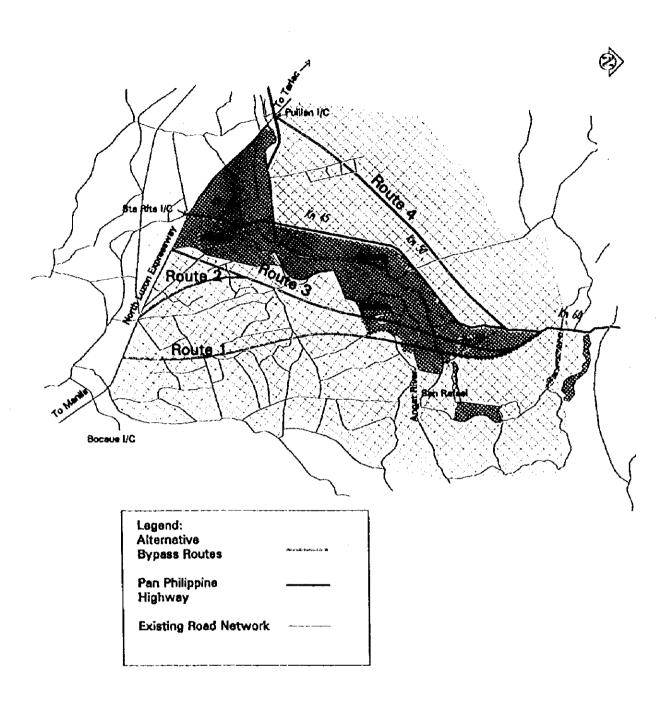
Legend: Agricultural Productivity		
Low		
Medium	1112	
High		

Viability of the Alternative Routes at the Plaridel-Baliuag Bypass Based on Agricultural Productivity



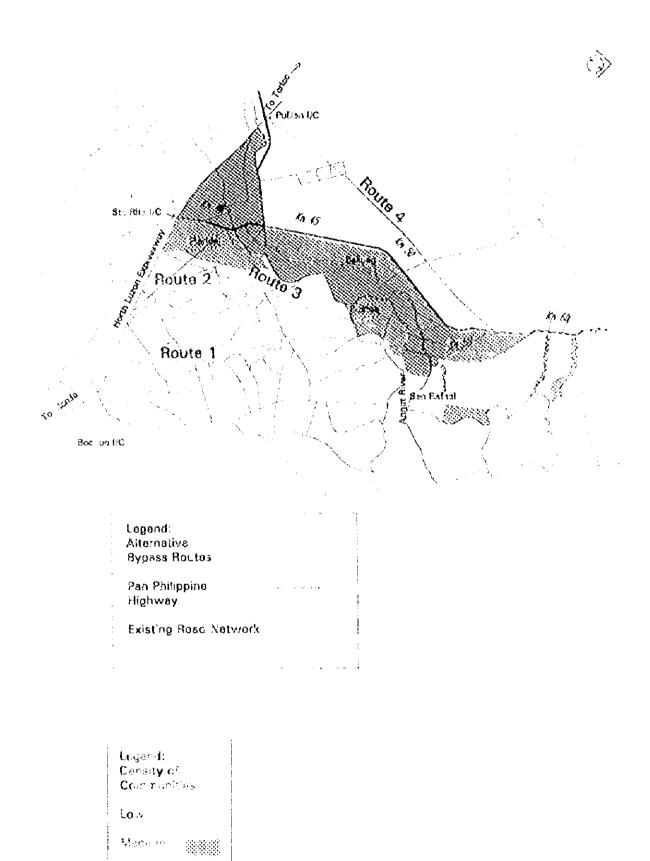
Legend: Biological Constraint	t s
Low	
Medium	
High	

Viability of the Alternative Routes at the Plaridel- Baliuag Bypass Based on Biological Constraints



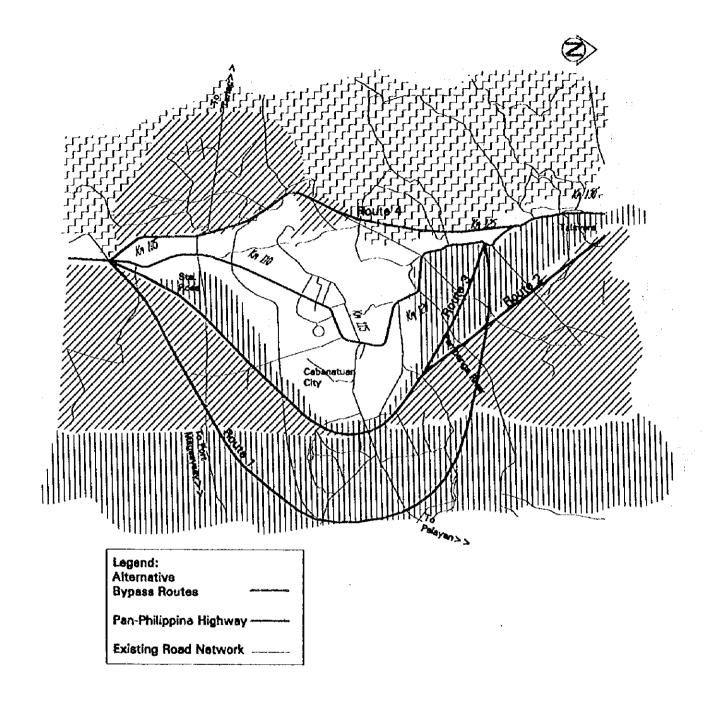
Legend: Density of Communities		
Low		
Medium		
High		

Viability of the Aternative Routes at the Plaridel- Baliuag Bypass Based on Density of Communities



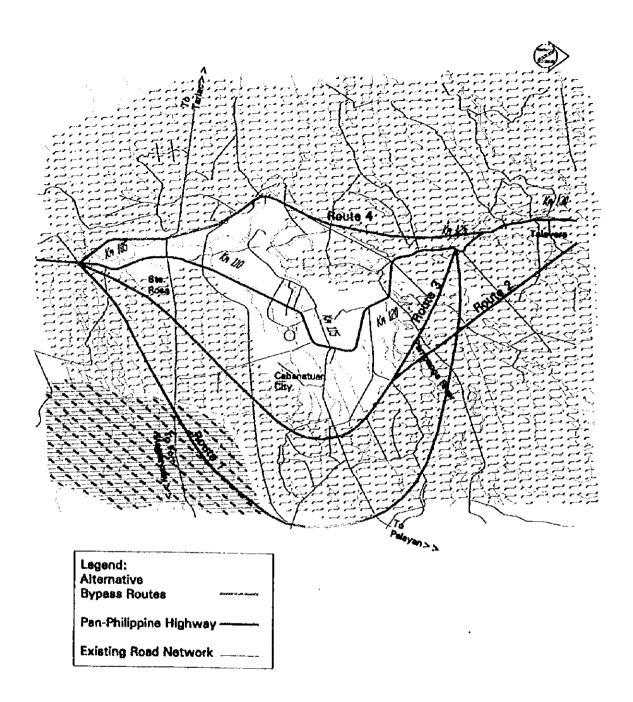
Viability of the Atemative Routes at the Plandel- Baliuag Bypass Based on Density of Communities

 $H_{\mathcal{G}^1}$



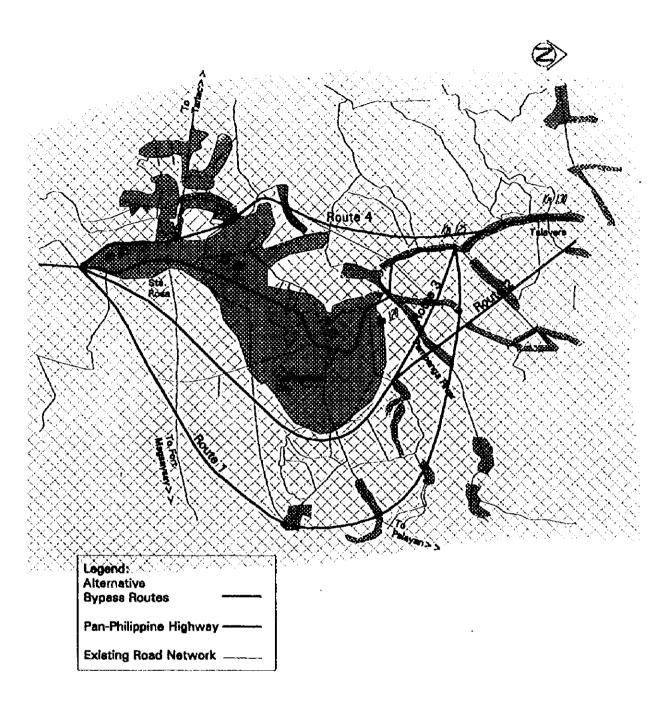
Legend: Agricultural Productivity	
Low	
muibeM	
High	

Viability of the Alternative Routes at the Cabanatuan Bypass Based on Agricultural Productivity



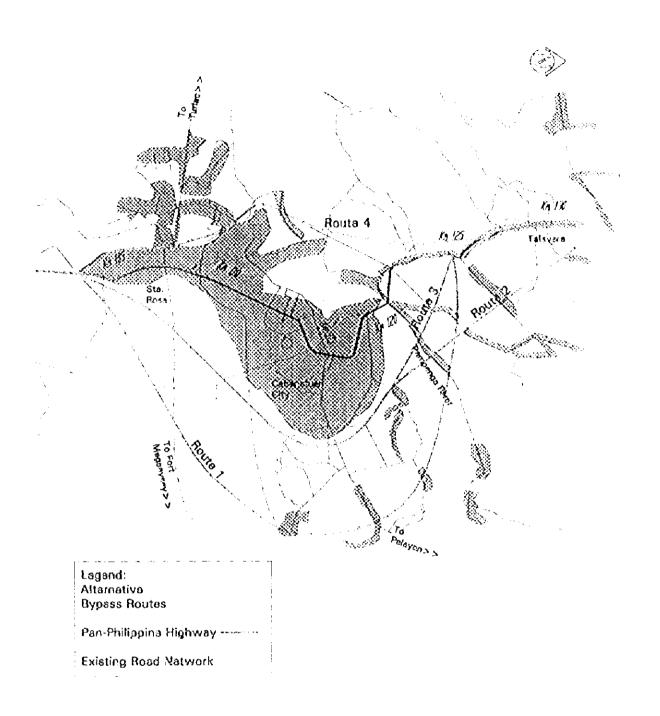
Legend: Biological Constrain	ts
Low	
Medium	
High	

Viability of the Alternative Routes at the Cabanatuan Bypass Based on Biological Constraints



Legend: Density of Commu	unities
Low	XXX
Medium	
High	

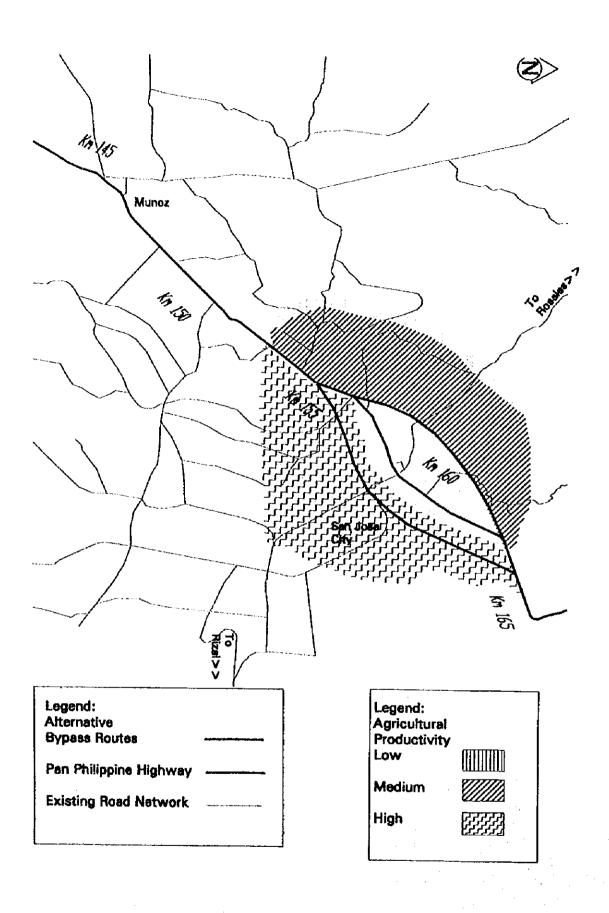
Viability of the Alternative Routes at the Cabanatuan Bypass Based on Density of Communities



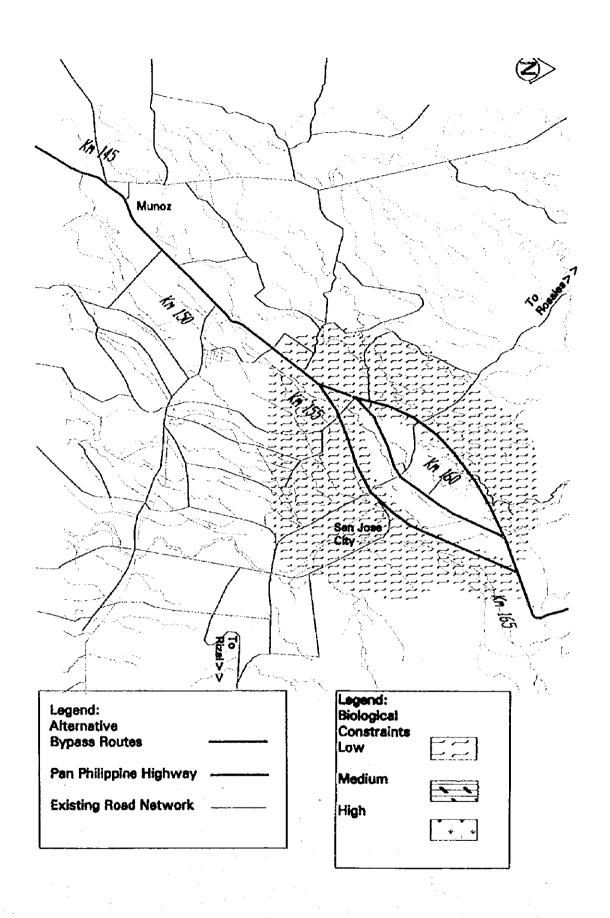
Legend:
Density
of Communities

Low
Medium
High

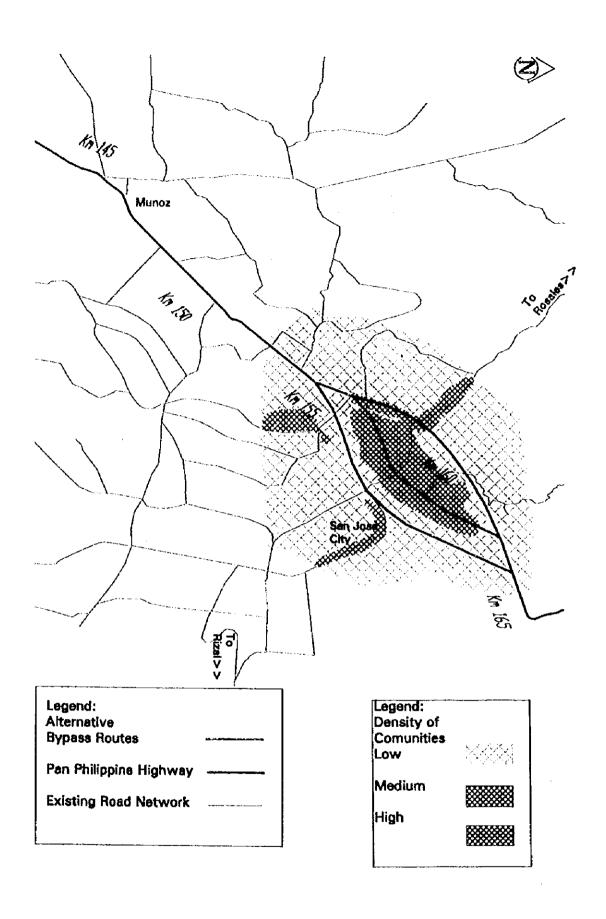
Viability of the Alternative Routes at the Cabanatuan Sypass Based on Density of Communities



Viability of the Alternative Routes at the San Jose Bypass Based on Agricultural Productivity



Viability of the Alternative Routes at the San Jose Bypass Based on Biological Constraints



Viability of the Alternative Route at the San Jose Bypass Based on Density of Communities